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07-18-06

Practitioner's Docket No. 32008-pa **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Number: 7,022,147 B2 10061773
Issued: April 4, 2006
Name of Patentee: Cui Bao Tai and Jerry Sharon
Title of Invention: Combustible Fuel Composition and Method

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT FOR PTO MISTAKE (37 C.F.R. § 1.322(a))

NOTE: "If such a request for correction was incurred through the fault of the United States Patent and Trademark Office (Office), and is clearly disclosed in the records of the Office, and is accompanied by documentation that unequivocally supports the patentee's assertion(s), a Certificate of Correction will be expeditiously issued. Such supporting documentation can consist of relevant photocopied receipts, manuscript pages, correspondence dated and received by the Office, photocopies of Examiners' responses regarding entry of amendments, or any other validation that supports the patentee's request so that the request can be processed without the patent file." Notice of September, 17, 2002, 1262 OG 96.

1. Attached is PTO/SB/44 (also FORM PTO/1050) in a form suitable for printing.

NOTE: Form PTO-1050 (or PTO/SB/44), using the column and line number in the printed patent, should be used exclusively regardless of the length or complexity of the subject matter. M.P.E.P. § 1485, 8th ed., Rev. 2.

NOTE: The patent grant should be retained by the patentee. The PTO does not attach the certificate of correction to the patentee's copy of the patent. The patent grant will be returned to the patentee if submitted. M.P.E.P. § 1485, 8th ed., Rev. 2.

2. The exact page and line number where the errors are shown correctly in the application file are:

NOTE: The exact page and line number where the errors occur in the application file should be identified on the request. However, on form PTO/SB/44, only the column and line number in the printed patent should be used. M.P.E.P., § 1485, 8th Edition, Rev. 2.

Please see attachment A.

Exp. Mail EV469011953US

JUL 20 2006

3. **Please send the Certificate to:**

Name: Mr. Daniel Chan, MBZQ, L.L.C.

Address: P.O. Box 2166

Sacramento, California 95812

(complete, if applicable)

Signature(s) of patentee(s)

or

(type or print name of assignee)

Signature of assignee or person authorized to sign on behalf of assignee

☒ Assignment recorded on February 1, 2002 Reel/Frame 012562/0923

January 8, 2003
Reel 013636
Frame 0789

Daniel Chan

(type or print name of authorized person signing)

President, GenPro, Inc.,
General Partner, General Produce Co., Ltd.
Title of authorized person signing MBZQ, L.L.C.
Managing Member,

☒ Recordal of assignment attached

☒ Attached is a "STATEMENT UNDER 37 CFR 3.73(b)," establishing the right of the assignee to take action in this case.

NOTE: "A certificate of correction, under 35 U.S.C. 254, may be issued at the request of the patentee or [the patentee's] assignee." 37 C.F.R. § 1.322(a). The certificate of correction can be signed by the attorney of record who acts on behalf of the inventor(s) or assignee(s).

JUL 20 2006

ATTACHMENT A TO REQUEST FOR CERTIFICATE OF CORRECTION

Patent No.: 7,022,147 B2

Application No.: 10/061,773

Issue Date: April 4, 2006

Inventor(s): Cui Bao Tai; Jerry Sharon

Page 6, lines 4-6: The phrase "comprising barium nitrate and sodium nitrate" should be changed to --comprising sodium nitrate and either barium nitrate or a combination of sodium and potassium nitrates--.

Page 6, lines 9-10: The sentence beginning "Above this vent" should be changed to --If desired, a fuse or lighting tab made out of a combustible material may be located above this vent--.

Page 6, lines 18-19: The phrase "fuse or lighting tab is applied" should be changed to --the fuse or lighting tab, if desired, is applied--.

Page 6, line 21- Page 7, line 1: Cancel the sentence "When the fuse or tab is lit, ignition is forced at the centrally-located vent" and insert --The fuel may be directly ignited on its accelerant-covered surface, or it may be lighted on a fuse or lighting tab present at the central location for convenience--.

Page 7, line 19: The phrase "The heat steady-state heat-release rate" should be changed to --the steady-state heat-release rate--.

Page 14, line 12: The phrase "zones of designated accelerated localized" should be changed to --zones of designated accelerated heating localized--.

Page 16, line 4 - Page 17, line 11: After the paragraph beginning "Viewed from a nineteenth vantage point", insert the following five paragraphs:

--Viewed from a twentieth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, the monolith of carbonaceous material comprising 10-65% wood charcoal, 33-86% anthracite coal, and a binder; and an accelerant coating a portion of the monolith of carbonaceous material, the accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Viewed from a twenty-first vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein the core comprises 65-94% of the

total mass of the fuel, and an accelerant predominantly applied to at least one facet of the core, wherein the accelerant comprises 6-35% of the total mass of the fuel.

Viewed from a twenty-second vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-third vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of said core, the accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-fourth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 85-95% of the total mass of the fuel, and an accelerant applied predominantly to at lease one facet of the core, the accelerant comprising 5-25% of the total mass of the fuel.--

Page 18, line 4: The sentence beginning "FIG. 3 is a flowchart" should be changed to --FIGS. 3A and 3B are flowcharts of two embodiments of the method according to the present invention--.

Page 18, line 14: After the sentence beginning "FIG. 9 is a depiction", insert the sentence --An optional fuse or lighting tab is present.--.

Page 19, line 5: The phrase "referring to FIG. 3, the flowchart" should be changed to --referring to FIGS. 3A and 3B, the flowcharts--.

Page 19, lines 8-9: The phrase "anthracite coal, sodium nitrate, and barium nitrate are dry" should be changed to --anthracite coal, and nitrates are dry--.

Page 19, lines 12-14: Cancel the sentence beginning "In a second tank" and insert the following sentence --In a second tank, either charcoal, coal, sodium nitrate, barium nitrate, calcium nitrate, and the binder mixture (FIG. 3A) or charcoal, sodium nitrate, potassium nitrate, calcium nitrate, and the binder mixture (FIG. 3B) are combined to produce an accelerant mixture.--.

Page 23, line 1: The phrase "table reflects" should be changed to --tables reflect--.

Page 23, line 2: The phrase "table also reflects" should be changed to --tables also reflect--.

Page 23, line 4: After the paragraph ending "specific briquette" and before the table, insert the title --Formulation 1:-- above the table.

Page 24, lines 1 - end of table: After the table for formulation 1 and before the paragraph beginning "Moreover", insert the title --Formulation 2:-- and insert the following table:

accelerant components	general ranges	specific briquette
weight percent	6-35%	10.7%
wood charcoal	48-92.4%	78%
calcium nitrate	3.05-22%	10.4%
potassium nitrate	2.5-22%	8%
sodium nitrate	0.05-4%	1.6%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

body components	general ranges	specific briquette
weight percent	65-94%	89.3%
wood charcoal	10-65%	23%
anthracite coal	33-86%	75%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

PTO/SB/21 (09-04)
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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/061,773
Filing Date	February 1, 2002
First Named Inventor	Cui Bao Tai
Art Unit	
Examiner Name	
Attorney Docket Number	32008-pa

Total Number of Pages in This Submission: 139

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
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- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
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- ☐ Status Letter
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  1. Request for Certificate of Correction
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  3. PTO Form PTO/SB/44
  4. Copy of Utility application filed 2/1/02
  5. Copy of return card
  6. Return Card

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Weintraub Genshlea Chediak		
Signature	Audrey A. Millemann		
Printed name	Audrey A. Millemann		
Date	July 14, 2006	Reg. No.	44,942

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I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as express mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below: Attn: Certificate of Correction Branch

Signature	Audrey A. Millemann		
Typed or printed name	Audrey A. Millemann	Date	July 14, 2006

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,022,147 B2

APPLICATION NO.: 10/061,773

ISSUE DATE : April 4, 2006

INVENTOR(S) : Cui Bao Tai; Jerry Sharon

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 2, lines 54-55: The phrase "comprising barium nitrate and sodium nitrate" should be changed to –comprising sodium nitrate and either barium nitrate or a combination of sodium and potassium nitrates–.

Column 2, lines 60-61: The sentence beginning "Above this vent" should be changed to –If desired, a fuse or lighting tab made out of a combustible material may be located above this vent–.

Column 3, line 6: The phrase "fuse or lighting tab is applied" should be changed to --the fuse or lighting tab, if desired, is applied--.

Column 3, lines 8-9: Cancel the sentence "When the fuse or tab is lit, ignition is forced at the centrally-located vent" and insert --The fuel may be directly ignited on its accelerant-covered surface, or it may be lighted on a fuse or lighting tab present at the central location for convenience--.

Column 3, lines 34-35: The phrase "The heat steady-state heat-release rate" should be changed to –the steady-state heat-release rate–.

Column 6, line 15: The phrase "zones of designated accelerated localized" should be changed to --zones of designated accelerated heating localized--.

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Column 6, line 67 - Column 7, line 1: After the paragraph beginning "Viewed from a nineteenth vantage point", insert the following five paragraphs:

--Viewed from a twentieth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, the monolith of carbonaceous material comprising 10-65% wood charcoal, 33-86% anthracite coal, and a binder; and an accelerant coating a portion of the monolith of carbonaceous material, the accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Viewed from a twenty-first vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein the core comprises 65-94% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of the core, wherein the accelerant comprises 6-35% of the total mass of the fuel.

Viewed from a twenty-second vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

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Column 7, lines 11-12: The sentence beginning "FIG. 3 is a flowchart" should be changed to --FIGS. 3A and 3B are flowcharts of two embodiments of the method according to the present invention--.

Column 7, line 24: After the sentence beginning "FIG. 9 is a depiction", insert the sentence --An optional fuse or lighting tab is present.--.

Column 7, line 45: The phrase "referring to FIG. 3, the flowchart" should be changed to --referring to FIGS. 3A and 3B, the flowcharts--.

Column 7, lines 50-51: The phrase "anthracite coal, sodium nitrate, and barium nitrate are dry" should be changed to --anthracite coal, and nitrates are dry--.

Column 7, lines 54-57: Cancel the sentence beginning "In a second tank" and insert the following sentence --In a second tank, either charcoal, coal, sodium nitrate, barium nitrate, calcium nitrate, and the binder mixture (FIG. 3A) or charcoal, sodium nitrate, potassium nitrate, calcium nitrate, and the binder mixture (FIG. 3B) are combined to produce an accelerant mixture.--.

Column 9, line 25: The phrase "table reflects" should be changed to --tables reflect--.

Column 9, lines 26-27: The phrase "table also reflects" should be changed to --tables also reflect--.

Column 9, line 30: After the paragraph ending "specific briquette" and before the table, insert the title --Formulation 1:-- above the table.

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Column 10, line 17: After the table for formulation 1 and before the paragraph beginning "Moreover", insert the title --Formulation 2:-- and insert the following table:

accelerant components	general ranges	specific briquette
weight percent	6-35%	10.7%
wood charcoal	48-92.4%	78%
calcium nitrate	3.05-22%	10.4%
potassium nitrate	2.5-22%	8%
sodium nitrate	0.05-4%	1.6%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

body components	general ranges	specific briquette
weight percent	65-94%	89.3%
wood charcoal	10-65%	23%
anthracite coal	33-86%	75%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

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P.O. Box 2166
Sacramento, California 95812

PTO/SB/96 (12-05)
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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: MBZQ, L.L.C.

Application No./Patent No./Control No.: 7,022,147 B2 Filed/Issue Date: April 4, 2006

Entitled: Combustible Fuel Composition and Method

MBZQ, L.L.C., a California limited liability company
(Name of Assignee) (Type of Assignee: corporation, partnership, university, government agency, etc.)

states that it is:

1. ☑ the assignee of the entire right, title, and interest; or

2. ☐ an assignee of less than the entire right, title and interest
(The extent (by percentage) of its ownership interest is _____%)

in the patent application/patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or a true copy of the original assignment is attached.

OR

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Cui Bao Tai and Jerry Sharon To: General Produce Company
The document was recorded in the United States Patent and Trademark Office at
Reel 012562, Frame 0923, or for which a copy thereof is attached.

2. From: General Produce Company To: MBZQ, L.L.C.
The document was recorded in the United States Patent and Trademark Office at
Reel 013636, Frame 0789, or for which a copy thereof is attached.

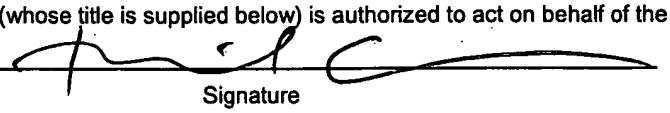
3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.



Signature — July 11, 2006 — Date

Daniel Chan — 916-441-6431

Printed or Typed Name — Telephone Number

President, GenPro, Inc.
General Partner, General Produce Co., Ltd.
Managing Member, MBZQ, L.L.C.
Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Exp. Mail EV469011953US

JUL 20 2006

UNITED STATES PATENT AND TRADEMARK OFFICE

MAY 08, 2003

PTAS

BERNHARD KRETEN
300 CAPITOL MALL, SUITE 1100
SACRAMENTO, CA 95814

Under Secretary of Commerce For Intellectual Property and
Director of the United States Patent and Trademark Office
Washington, DC 20231
www.uspto.gov

102333785A

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 01/08/2003

REEL/FRAME: 013636/0789
NUMBER OF PAGES: 6

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
GENERAL PRODUCE COMPANY

DOC DATE: 12/18/2002

ASSIGNEE:
MBZQ, L.L.C.
POST OFFICE BOX 2166
SACRAMENTO, CALIFORNIA 95812

SERIAL NUMBER: 10061773
PATENT NUMBER:

FILING DATE: 02/01/2002
ISSUE DATE:

STEVEN POST, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

01-10-2003

102333785

Form PTO-1595
(Rev. 03/01)
OMB No. 0651-0027 (exp. 5/31/2002)
Tab settings ⇨ ⇨ ⇨

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

General Produce Company

1-8-03

Additional name(s) of conveying party(ies) attached? ☐ Yes ☑ No

2. Name and address of receiving party(ies)

Name: MBZQ, L.L.C.

Internal Address: Post Office Box 2166

Street Address: same as above

City: Sacramento State: CA Zip: 95812

Additional name(s) & address(es) attached? ☐ Yes ☐ No

3. Nature of conveyance:

☑ Assignment ☐ Merger

☐ Security Agreement ☐ Change of Name

☐ Other_____

Execution Date: December 18, 2002

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:_____

A. Patent Application No.(s)

10/061,773

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☑ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Bernhard Kreten

Internal Address: 300 Capitol Mall, Suite 1100

Street Address: same as above

City: Sacramento State: CA Zip: 95814

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....$ 40.00

☑ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

11-1734

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Bernhard Kreten
Name of Person Signing

Signature

January 3, 2003
Date

Total number of pages including cover sheet, attachments, and documents:

01/09/2003 DBYRNE 00000117 10061773
01 FC:8021 40.00 OP

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents & Trademarks, Box Assignments
Washington, D.C. 20231

2003 JAN -8 PM 2:28
OFFICE OF PUBLIC RECORDS
FINANCE SECTION

ASSIGNMENT OF PATENT APPLICATION

WHEREAS, **General Produce Company**, of **Sacramento, California**, did file a Patent Application in the United States for an improvement in a(n) **Combustible Fuel Composition and Method**, on **February 1, 2002** as **U.S. Application No. 10/061,773**,

WHEREAS, General Produce Company is now the sole owner of said Patent Application; and

WHEREAS, **MBZQ, L.L.C.**, of **Post Office Box 2166, Sacramento, California 95812-2166, a Limited Liability corporation**, is desirous of acquiring the entire interest in the same;

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00), the receipt of which is hereby acknowledged, and other good and valuable considerations, **General Produce Company**, by these presents does sell, assign and transfer unto the said **MBZQ, L.L.C.**, the entire right, title and interest in and to the said Patent Application, and all original and reissued Patents granted therefore, and all divisions and continuations thereof, including the subject-matter of any and all claims which may be obtained in every such Patent, and the right to apply for and obtain Patents, Utility Model Registrations and Inventor's Certificates in countries foreign to the United States, and in and to any Letters Patent, Utility Model Registration or Inventor's Certificate which may be granted thereon in such foreign countries, including all priority rights under the International Convention associated therewith for each country of the Union, and authorize and request the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue Patents on applications as aforesaid, to issue the said Letters Patent, Utility Model Registration or Inventor's Certificate to the said **MBZQ, L.L.C.**, its successors, assigns, nominees or their legal representatives, as assignee of the entire interest, and General Produce Company covenants that General Produce Company has full right to convey the entire interest herein assigned and that General Produce Company has not executed and will not execute any agreement in conflict herewith, and agree that General Produce Company will communicate to said **MBZQ, L.L.C.**, its successors, assigns, nominees or other legal representatives all facts known to me respecting said invention, whenever requested, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths and do all lawful acts requisite for the application for such divisional, continuing or reissue applications, or the procuring thereof, and that if and when said representatives desire to file a disclaimer relating thereto, General Produce Company will, upon request, sign all lawful papers requisite for the filing of such disclaimer, and General Produce Company further covenants and agrees that General Produce Company will, at any time upon request, do everything legally possible to aid said **MBZQ, L.L.C.**, its successors, assigns, nominees or other legal representatives, either in

its or their own name, to apply for, obtain and enforce Patent, Utility Model and/or Inventor's Certificate protection for said improvements in all countries, all without further consideration, but at the expense of said **MBZQ, L.L.C.**, its successors, assigns, nominees, or other legal representatives.

Executed this 18th day of December, 2002, at Sacramento.

General Produce Company:

GEMPRO Inc.

By: [signature]

Its: president

State of California)
SS:
County of Sacramento)

On December 18, 2002, before me, Dawn C. Pedicord, a Notary Public in and for said State, personally appeared Daniel W. Chan personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Dawn C. Pedicord
NOTARY PUBLIC

DAWN C. PEDICORD
Commission # 1377865
Notary Public - California
Sacramento County
My Comm. Expires Oct 30, 2006

Form PTO-1595
(Rev. 03/01)
OMB No. 0651-0027 (exp. 5/31/2002)

RECORDATION FORM COVER SHEET
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U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

Tab settings ⇨ ⇨ ⇨

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

General Produce Company

Additional name(s) of conveying party(ies) attached? ☐ Yes ☑ No

3. Nature of conveyance:

☑ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other_____

Execution Date: December 18, 2002

2. Name and address of receiving party(ies)

Name: MBZQ, L.L.C.

Internal Address: Post Office Box 2166

Street Address: same as above

City: Sacramento State: CA Zip: 95812

Additional name(s) & address(es) attached? ☐ Yes ☐ No

2003 JAN -8 PM 2:29
OFFICE OF PUBLIC RECORDS
NANCE SECTION

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:_____

A. Patent Application No.(s)

10/061,773

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☑ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Bernhard Kreten

Internal Address: 300 Capitol Mall, Suite 1100

Street Address: same as above

City: Sacramento State: CA Zip: 95814

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....$ 40.00

☑ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

11-1734

(Attach duplicate copy of this page if paying by deposit account)

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Bernhard Kreten		January 3, 2003
Name of Person Signing	Signature	Date

Total number of pages including cover sheet, attachments, and documents: ☐

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents & Trademarks, Box Assignments
Washington, D.C. 20231

POWER OF ATTORNEY

The undersigned assignee, **MBZQ, L.L.C., Post Office Box 2166, Sacramento, California 95812**, hereby appoints:

BERNHARD KRETEN, Reg. No. 27,037, 300 Capitol Mall, Suite 1100, Sacramento, California 95814

as attorney to prosecute and transact all business in the Patent and Trademark Office connected with the application on **Combustible Fuel Composition and Method, Attorney's Ref.: 32008-pa, filed February 1, 2002 as Application No. 10/061,773**, and to receive or make payments on its behalf.

Signature of the assignee:

MBZQ, L.L.C.
By GENERAL PRODUCE GENPAK INC.

Date: 1-2-03

By:
Its: PRESIDENT

CERTIFICATE OF MAILING UNDER 37 C.F.R. 1.8(a)

Applicant:		Cui Bao Tai
Serial No.:		10/061,773
Filing Date:		February 1, 2002
For:		Combustible Fuel Composition and Method
Paper:	1.	A Recordation Form Cover Sheet (original and one copy);
	2.	An Assignment of Patent Application;
	3.	A Power of Attorney;
	4.	A check in the amount of $40.00 to cover the government recordation fee; and
	5.	A Return Receipt Card.

I hereby certify that the above identified correspondence, which is attached, is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to:

Assistant Commissioner for Patents
Box ASSIGNMENTS
Washington, DC 20231

on January 3, 2003.

Heidi Hernandez
Heidi Hernandez
(Signature)

January 3, 2003
(Date of Signature)

UNITED STATES
PATENT AND
TRADEMARK OFFICE

Chief Information Officer
Washington, DC 20231
www.uspto.gov

APRIL 09, 2002

PTAS

KRETEN, BERNHARD
77 CADILLAC DRIVE, SUITE 245
SACRAMENTO, CA 95825

101983469A

UNITED STATES PATENT AND TRADEMARK OFFICE
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THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 02/01/2002

REEL/FRAME: 012562/0923
NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
TAI, CUI BAO

DOC DATE: 01/05/2002

ASSIGNOR:
SHARON, JERRY

DOC DATE: 01/03/2002

ASSIGNEE:
GENERAL PRODUCE COMPANY
1330 NORTH B STREET
SACRAMENTO, CALIFORNIA 95814

SERIAL NUMBER: 10061773
PATENT NUMBER:

FILING DATE: 02/01/2002
ISSUE DATE:

TONYA LEE, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

02-14-2002

101983469

Form PTO-1595 (Rev. 03/01)
OMB No. 0651-0027 (exp. 5/31/2002)
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U.S. Patent and Trademark Office

JC973 U.S. PTO 10/061773 02/01/02

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Cui Bao Tai, Jerry Sharon 2-1-02

Additional name(s) of conveying party(ies) attached? ☐ Yes ☑ No

3. Nature of conveyance:

☑ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other_____

Execution Date: January 3, 15, 2002

2. Name and address of receiving party(ies)

Name: General Produce Company
Internal Address: 1330 North B Street

Street Address: 1330 North B Street

City: Sacramento State: CA Zip: 95814

Additional name(s) & address(es) attached? ☐ Yes ☐ No

4. Application number(s) or patent number(s): 10/061773

If this document is being filed together with a new application, the execution date of the application is: 01/30/02

A. Patent Application No.(s)

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☑ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Bernhard Kreten
Internal Address: 77 Cadillac Drive, Suite 245

Street Address: 77 Cadillac Drive, Suite 245

City: Sacramento State: CA Zip: 95825

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....$ 40.00

☑ Enclosed
☐ Authorized to be charged to deposit account

8. Deposit account number:

11-1734

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Bernhard Kreten — Name of Person Signing
Signature
02/01/2002 — Date

Total number of pages including cover sheet, attachments, and documents: ☐

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Washington, D.C. 20231

02/07/2002 TGEDAHU1 00000030 10061773
04 FC:581 40.00 OP

ASSIGNMENT OF PATENT APPLICATION

WHEREAS, we, **Cui Bao Tai**, of **Jin Chen Shanxi, China**, and **Jerry Sharon** of **Sacramento, California** did file a Patent Application in the United States for an improvement in a(n) **Combustible Fuel Composition and Method**, herewith,

WHEREAS, we are now the sole owners of said Patent Application; and

WHEREAS, **General Produce Company**, of **1330 North B Street, Sacramento, California 95814 California, a limited partnership organized under the laws of the State of California, United States of America**, is desirous of acquiring the entire interest in the same;

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00), the receipt of which is hereby acknowledged, and other good and valuable considerations, we, **Cui Bao Tai and Jerry Sharon**, by these presents do sell, assign and transfer unto the said **General Produce Company**, the entire right, title and interest in and to the said Patent Application, and all original and reissued Patents granted therefore, and all divisions and continuations thereof, including the subject-matter of any and all claims which may be obtained in every such Patent, and the right to apply for and obtain Patents, Utility Model Registrations and Inventor's Certificates in countries foreign to the United States, and in and to any Letters Patent, Utility Model Registration or Inventor's Certificate which may be granted thereon in such foreign countries, including all priority rights under the International Convention associated therewith for each country of the Union, and authorize and request the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue Patents on applications as aforesaid, to issue the said Letters Patent, Utility Model Registration or Inventor's Certificate to the said **General Produce Company**, its successors, assigns, nominees or their legal representatives, as assignee of the entire interest, and we covenant that we have full right to convey the entire interest herein assigned and that we have not executed and will not execute any agreement in conflict herewith, and agree that we will communicate to said **General Produce Company**, its successors, assigns, nominees or other legal representatives all facts known to me respecting said invention, whenever requested, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths and do all lawful acts requisite for the application for such divisional, continuing or reissue applications, or the procuring thereof, and that if and when said representatives desire to file a disclaimer relating thereto, we will, upon request, sign all lawful papers requisite for the filing of such disclaimer, and we further covenant and agree that we will, at any time upon request, do everything legally possible to aid said **General Produce Company**, its successors, assigns, nominees or other legal representatives, either in its or their own name, to apply for, obtain and enforce Patent, Utility Model and/or Inventor's Certificate protection for said

improvements in all countries, all without further consideration, but at the expense of said **General Produce Company**, its successors, assigns, nominees, or other legal representatives.

Executed this 15 day of 1, 2001 at _____, _____.

People's Republic of China)
Municipality of Beijing) SS:
Embassy of the United)
~~State~~ of America)

崔保太
Cui Bao Tai

~~State of~~ _____)
) SS:
~~County of~~ _____)

On JAN 15 2002, ~~2001~~, before me, Min Bookbinder Consular Associate, a Notary Public in and for said State, personally appeared **Cui Bao Tai**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Min Bookbinder

NOTARY PUBLIC Min Bookbinder
Consular Associate

Executed this 3rd day of January, 2001, at Sacramento, California.

Jerry Sharon

State of California)
) SS:
County of Sacramento)

On January 3, 2001, before me, Twyla Bankhead, a Notary Public in and for said State, personally appeared **Jerry Sharon**, ~~personally known to me~~ (~~or~~ proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Twyla Bankhead

NOTARY PUBLIC

TWYLA BANKHEAD
COMM. # 1279030
NOTARY PUBLIC-CALIFORNIA
SACRAMENTO COUNTY
COMM. EXP. OCT. 1, 2004

Attorney Docket No.: FRO/151/US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of Howard A. Fromson and William J. Rozell

Serial No. 09/975,165 Examiner: Not Assigned

Filing Date: October 11, 2001 Group Art Unit: 1752

For: Developing Imaged Lithographic Printing Plates

Box Assignment
Commissioner for Patents
Washington, DC 20231

Sir:

REQUEST FOR RECORDATION OF ASSIGNMENT

Attached is an Assignment of the above-identified patent application together with a Recordation Form Cover Sheet. These documents were submitted along with the filing of the subject patent application together with a check for the recordation fee in the amount of $40.00.

These documents were received by Applicant's attorney on January 10, 2002 in the attached envelope with a Houston, Texas postmark. It is unknown how the documents got to Texas or who in Texas returned them. Although the documents bear the stamp indicating receipt of the recordation fee by the PTO and bear a sticker

Form PTO-1595
(Rev. 03/01)
OMB No. 0651-0027 (exp. 5/31/2002)

RECORDATION FORM COVER SHEET
PATENTS ONLY

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

Tab settings ⇨ ⇨ ⇨

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Cui Bao Tai, Jerry Sharon

Additional name(s) of conveying party(ies) attached? ☐ Yes ☑ No

3. Nature of conveyance:

☑ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other_____

Execution Date: January 3, 15, 2002

2. Name and address of receiving party(ies)

Name: General Produce Company
Internal Address: 1330 North B Street

Street Address: 1330 North B Street

City: Sacramento State: CA Zip: 95814

Additional name(s) & address(es) attached? ☐ Yes ☐ No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: 01/30/02

A. Patent Application No.(s)

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☐ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Bernhard Kreten
Internal Address: 77 Cadillac Drive, Suite 245

Street Address: 77 Cadillac Drive, Suite 245

City: Sacramento State: CA Zip: 95825

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....$ 40.00

☑ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

11-1734

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Bernhard Kreten — Name of Person Signing
Signature
02/01/2002 — Date

Total number of pages including cover sheet, attachments, and documents: ☐

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents & Trademarks, Box Assignments
Washington, D.C. 20231

JC973 U.S. PTO
10/061773
02/01/02

Bernhard Kreten, Esq. & Associates
77 Cadillac Drive, Suite 245
Sacramento, California 95825

PLEASE ACKNOWLEDGE RECEIPT OF:

A Patent Application (utility) (comprised of pages 1 through 30); a Utility Patent Application Transmittal Letter; Fee Transmittal (original and one copy); Request and Certification under 35 U.S.C. 122(b)(2)(B)(i); Preliminary Amendment; Substitute Specification under 37 C.F.R. §1.121(b)(3); Bracketed and Underlined Section of Patent Specification (25 pages); Bracketed and Underlined Claims (1 page); Clean Copy of Pending Claims (10 pages); a Declaration for Patent Application; a Recordation Form Cover Sheet (original and one copy); an Assignment of Patent Application; a Power of Attorney; Seven (7) sheets of drawing figures (~~comprised~~ of figures 1 through 15); a Form PTO-1449 (including prior art copies); a check in the amount of $1,499.00; and a **Certificate of Mailing under 37 C.F.R. §1.10.**

Applicant: Cui Bao Tai, Jerry Sharon
For: Combustible Fuel Composition and Metho

S.N. _____

32008-pa

Exp. Mail EV469011953US

A ORIGINAL DOCUMENT IS PRINTED ON CHEMICAL REACTIVE PAPER & HAS A MICROPRINTED BORDER A

BERNHARD KRETEN, ESQ. & ASSOCIATES
77 CADILLAC DRIVE, SUITE 245
SACRAMENTO, CALIFORNIA 95825
(916) 921-6181

EXPLANATION	AMOUNT
Cui Bao Tai	

90-3341/1211

6435

PAY AMOUNT OF one thousand four hundred ninety-nine dollars 00/100 DOLLARS

DATE	TO THE ORDER OF	CHECK NUMBER	REFERENCE	DESCRIPTION
2/1/02	Comm. for Patents	6435	32008-pa	Patent Application

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900 HOWE AVENUE SACRAMENTO, CA 95825

MP

A THE REVERSE SIDE OF THIS DOCUMENT INCLUDES AN ARTIFICIAL WATERMARK - HOLD AT AN ANGLE TO VIEW A

⑈006435⑈ ⑆121133416⑆ 021019607⑈

Exp. Mail EV469011953US

EV000255796US

PLEASE ACKNOWLEDGE RECEIPT OF:

A Patent Application (utility) (comprised of pages 1 through 30); a Utility Patent Application Transmittal Letter; Fee Transmittal (original and one copy); Request and Certification under 35 U.S.C. 122(b)(2)(B)(i); Preliminary Amendment; Substitute Specification under 37 C.F.R. §1.121(b)(3); Bracketed and Underlined Section of Patent Specification (25 pages); Bracketed and Underlined Claims (1 page); Clean Copy of Pending Claims (10 pages); a Declaration for Patent Application; a Recordation Form Cover Sheet (original and one copy); an Assignment of Patent Application; a Power of Attorney; Seven (7) sheets of drawing figures (comprised of figures 1 through 15); a Form PTO-1449 (including prior art copies); a check in the amount of $1,499.00; and a **Certificate of Mailing under 37 C.F.R. §1.10.**

Applicant: Cui Bao Tai, Jerry Snaron
For: Combustible Fuel Composition and Method

S.N. _____
32008-pa

As Filed
2-1-02

PTO/SB/05 (03-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	32008-pa
First Inventor	Cui Bao Tai
Title	Combustible Fuel Composition and Method
Express Mail Label No.	EV000255796US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. [✔] Fee Transmittal Form (e.g., PTO/SB/17) *(Submit an original and a duplicate for fee processing)*
2. [✔] Applicant claims small entity status. See 37 CFR 1.27.
3. [✔] Specification [*Total Pages* 30] *(preferred arrangement set forth below)*
   - Descriptive title of the invention
   - Cross Reference to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to sequence listing, a table, or a computer program listing appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
4. [✔] Drawing(s) *(35 U.S.C. 113)* [*Total Sheets* 6]
5. Oath or Declaration [*Total Pages* 1]
   a. [✔] Newly executed (original or copy)
   b. [ ] Copy from a prior application (37 CFR 1.63 (d)) *(for continuation/divisional with Box 18 completed)*
      i. [ ] DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. [ ] Application Data Sheet. See 37 CFR 1.76
7. [ ] CD-ROM or CD-R in duplicate, large table or Computer Program (*Appendix*)
8. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   a. [ ] Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. [ ] CD-ROM or CD-R (2 copies); or
      ii. [ ] paper
   c. [ ] Statements verifying identity of above copies

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

ACCOMPANYING APPLICATION PARTS

9. [✔] Assignment Papers (cover sheet & document(s))
10. [ ] 37 CFR 3.73(b) Statement *(when there is an assignee)* [✔] Power of Attorney
11. [ ] English Translation Document *(if applicable)*
12. [✔] Information Disclosure Statement (IDS)/PTO-1449 [✔] Copies of IDS Citations
13. [✔] Preliminary Amendment
14. [✔] Return Receipt Postcard (MPEP 503) *(Should be specifically itemized)*
15. [ ] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. [✔] Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. [ ] Other: .....

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:*

[ ] Continuation [ ] Divisional [✔] Continuation-in-part (CIP) of prior application No.: 09 / 881,310

Prior application information: Examiner: Dorothy Riley Group Art Unit: 1714

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

[ ] *Customer Number or Bar Code Label* (Insert Customer No. or Attach bar code label here) or [✔] *Correspondence address below*

Name	Bernhard Kreten				
Address	77 Cadillac Drive, Suite 245				
City	Sacramento	*State*	California	*Zip Code*	95825
Country	United States	*Telephone*	916-921-6181	*Fax*	921-9213

Name (Print/Type)	Bernhard Kreten	*Registration No. (Attorney/Agent)*	27,037
Signature		*Date*	02/01/2002

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

PTO/SB/17 (10-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT ($) 1499.00

Complete if Known	
Application Number	
Filing Date	02/01/2002
First Named Inventor	Cui Bao Tai
Examiner Name	
Group Art Unit	
Attorney Docket No.	32008-pa

METHOD OF PAYMENT

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: Bernhard Kreten

Deposit Account Name: 11-1734

☑ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☑ Applicant claims small entity status. See 37 CFR 1.27

2. ☑ Payment Enclosed:

☑ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	370.00
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) ($) 370.00

2. EXTRA CLAIM FEES

		Extra Claims		Fee from below	Fee Paid
Total Claims	43	-20** = 23	X	9.00	=207.00
Independent Claims	24	- 3** = 21	X	42.00	=882.00
Multiple Dependent					=0.00

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 1089.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	40.00
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($) 40.00

SUBMITTED BY				Complete (if applicable)	
Name (Print/Type)	Bernhard Kreten	Registration No. (Attorney/Agent)	27,037	Telephone	916-921-6181
Signature				Date	02/01/2002

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC

PTO/SB/35 (11-00)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE

NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)

First Named Inventor	Cui Bao Tai
Title	Combustible Fuel Composition and Method
Atty Docket Number	32008-pa

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

02/01/2002
Date

Signature

Bernhard Kreten
Typed or printed name

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing.**

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled Combustible Fuel Composition and Method, the specification of which:

XX is attached hereto.
____ was filed on _____ as Application Serial No.: _____
and was amended on: _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37. (Code of Federal Regulations 1.56(a)).

I hereby claim foreign priority benefits under Title 35, U.S. Code 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed
			NO
(Number)	(Country)	(Day/Month/Year)	

I hereby claim the benefit under Title 35, U.S. Code 120 of any U.S. application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior U.S. application in the manner provided by the first paragraph of Title 35, U.S. Code 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56(a), which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status-patented, pending, abandoned)

I hereby appoint BERNHARD KRETEN, Reg. No. 27,037 to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Address all telephone calls to: (916) 921-6181
Address all correspondence to 77 Cadillac Drive, Suite 245, Sacramento, California 95825

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Inventor: Cui Bao Tai Citizenship: China
Inventor's Signature: 崔保太 Date: 15 1 2002
Residence: Number 150, Zhao Village, Jincun Zhen, Jin Chen Shanxi, China
Post Office Address: Number 150, Zhao Village, Jincun Zhen, Jin Chen Shanxi, China

Full Name of Inventor: Jerry Sharon Citizenship: United States
Inventor's Signature: Jerry Sharon Date: 01/03/02
Residence: 1330 North B Street, Sacramento, California 95814
Post Office Address: 1330 North B Street, Sacramento, California 95814

POWER OF ATTORNEY OR AUTHORIZATION OF AGENT

Application Number	
Filing Date	June 12, 2001
First Named Inventor	Cui Bao Tai
Title	Combustible Fuel...
Group Art Unit	
Examiner Name	
Attorney Docket Number	100017-pa

I hereby appoint:

☐ Practitioners at Customer Number [ ] → *Place Customer Number Bar Code Label here*

OR

☒ Practitioner(s) named below:

Name	Registration Number
Bernhard Kreten	27,037

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

☐ The above-mentioned Customer Number.

OR

☐ Practitioners at Customer Number [ ] → *Place Customer Number Bar Code Label here*

OR

☒ Firm or Individual Name	Bernhard Kreten, Esq. & Associates				
Address	77 Cadillac Drive, Suite 245				
Address					
City	Sacramento	State	Calif.	Zip	95825
Country	U.S.A.				
Telephone	(916) 921-6181	Fax	(916) 921-9213		

I am the:

☒ Applicant/Inventor.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

SIGNATURE of Applicant or Assignee of Record

Name	Thomas O. Chan
Signature	
Date	8 JUNE 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

Form PTO-1595
(Rev. 03/01)
OMB No. 0651-0027 (exp. 5/31/2002)

RECORDATION FORM COVER SHEET
PATENTS ONLY

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

Tab settings ⇨ ⇨ ⇨ ▼ ▼ ▼ ▼ ▼ ▼ ▼

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Cui Bao Tai, Jerry Sharon

Additional name(s) of conveying party(ies) attached? ☐ Yes ☑ No

3. Nature of conveyance:

☑ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other_____

Execution Date: January 3, 15, 2002

2. Name and address of receiving party(ies)

Name: General Produce Company
Internal Address: 1330 North B Street

Street Address: 1330 North B Street

City: Sacramento State: CA Zip: 95814

Additional name(s) & address(es) attached? ☐ Yes ☐ No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: 01/30/02

A. Patent Application No.(s)

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☐ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Bernhard Kreten
Internal Address: 77 Cadillac Drive, Suite 245

Street Address: 77 Cadillac Drive, Suite 245

City: Sacramento State: CA Zip: 95825

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....$ 40.00

☑ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

11-1734

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Bernhard Kreten		02/01/2002
Name of Person Signing	Signature	Date

Total number of pages including cover sheet, attachments, and documents: ☐

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents & Trademarks, Box Assignments
Washington, D.C. 20231

ASSIGNMENT OF PATENT APPLICATION

WHEREAS, we, **Cui Bao Tai**, of **Jin Chen Shanxi, China**, and **Jerry Sharon** of **Sacramento, California** did file a Patent Application in the United States for an improvement in a(n) **Combustible Fuel Composition and Method**, herewith,

WHEREAS, we are now the sole owners of said Patent Application; and

WHEREAS, **General Produce Company, of 1330 North B Street, Sacramento, California 95814 California, a limited partnership organized under the laws of the State of California, United States of America**, is desirous of acquiring the entire interest in the same;

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00), the receipt of which is hereby acknowledged, and other good and valuable considerations, we, **Cui Bao Tai and Jerry Sharon**, by these presents do sell, assign and transfer unto the said **General Produce Company**, the entire right, title and interest in and to the said Patent Application, and all original and reissued Patents granted therefore, and all divisions and continuations thereof, including the subject-matter of any and all claims which may be obtained in every such Patent, and the right to apply for and obtain Patents, Utility Model Registrations and Inventor's Certificates in countries foreign to the United States, and in and to any Letters Patent, Utility Model Registration or Inventor's Certificate which may be granted thereon in such foreign countries, including all priority rights under the International Convention associated therewith for each country of the Union, and authorize and request the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue Patents on applications as aforesaid, to issue the said Letters Patent, Utility Model Registration or Inventor's Certificate to the said **General Produce Company**, its successors, assigns, nominees or their legal representatives, as assignee of the entire interest, and we covenant that we have full right to convey the entire interest herein assigned and that we have not executed and will not execute any agreement in conflict herewith, and agree that we will communicate to said **General Produce Company**, its successors, assigns, nominees or other legal representatives all facts known to me respecting said invention, whenever requested, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths and do all lawful acts requisite for the application for such divisional, continuing or reissue applications, or the procuring thereof, and that if and when said representatives desire to file a disclaimer relating thereto, we will, upon request, sign all lawful papers requisite for the filing of such disclaimer, and we further covenant and agree that we will, at any time upon request, do everything legally possible to aid said **General Produce Company**, its successors, assigns, nominees or other legal representatives, either in its or their own name, to apply for, obtain and enforce Patent, Utility Model and/or Inventor's Certificate protection for said

improvements in all countries, all without further consideration, but at the expense of said General Produce Company, its successors, assigns, nominees, or other legal representatives.

Executed this 15 day of 1, 2001, at _____, _____.

People's Republic of China)
Municipality of Beijing) SS:
Embassy of the United)
~~State~~s of America)

崔保太
Cui Bao Tai

~~County of~~ _____) SS:

On JAN 15 2002, ~~2001~~, before me, Min Bookbinder Consular Associate, a Notary Public in and for said State, personally appeared **Cui Bao Tai**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Min Bookbinder
NOTARY PUBLIC Min Bookbinder
Consular Associate

Executed this 3rd day of January, 2001, at Sacramento, California.

Jerry Sharon

State of California)
County of Sacramento) SS:

On January 3, 2001, before me, Twyla Bankhead, a Notary Public in and for said State, personally appeared **Jerry Sharon**, ~~personally known to me~~ (~~or~~ proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Twyla Bankhead
NOTARY PUBLIC

TWYLA BANKHEAD
COMM. # 1279030
NOTARY PUBLIC-CALIFORNIA
SACRAMENTO COUNTY
COMM. EXP. OCT. 1, 2004

PTO/SB/08A (6-95)
Approved for use through 07/31/96, OMB 0651-0031
Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Please type a plus sign (+) inside this box [+]

1449A/PTO
Rev. 10/95

U.S. Department of Commerce
Patent and Trademark Office

LIST OF PRIOR ART CITED BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 3

Complete if Known	
Application Number	
Filing Date	2/1/02
First Named Inventor	Chi Bao Tai
Group Art Unit	
Examiner Name	
Attorney Docket Number	32008-pa

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	U.S. Patent Document Number	Kind Code[2] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	2,816,013		George B. Powell	12-10-1957	
	2	2,876,084		Alexander Leggin	03-03-1959	
	3	3,068,080		Anthony R. Ronzio	12-11-1962	
	4	3,336,122		W.C. Smith	08-15-1967	
	5	3,352,651		Julian Scott Davidson	11-14-1967	
	6	3,395,002		Henry S. Winnicki	07-30-1968	
	7	3,431,093		Jerry M. Kreinik	03-04-1969	
	8	3,485,599		Richardson	12-23-1969	
	9	3,934,986		Avedikian	01-27-1976	
	10	3,955,937		Whang	05-11-1976	
	11	3,988,121		Leveskis	10-26-1976	
	12	4,118,202		Scholes	10-03-1978	
	13	4,165,968		Duncan	08-28-1979	
	14	4,167,398		Hughes et al.	09-11-1979	
	15	4,437,862		Whang	03-20-1984	
	16	4,443,227		Avedikian	04-17-1984	
	17	4,485,584		Raulerson, et al.	12-04-1984	
	18	4,822,380		Young	04-18-1989	
	19	4,834,774		Fay, III, et al.	05-30-1989	
	20	5,427,805		Crace	06-27-1995	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Office[3]	Kind Code[5] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Unique citation designation number. [2] See attached Kinds of U.S. Patent Documents. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16, if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231.
DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08A (6-95)

Approved for use through 07/31/96, OMB 0651-0031

Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Please type a plus sign (+) inside this box [+]

1449A/PTO Rev. 10/95 — U.S. Department of Commerce, Patent and Trademark Office

LIST OF PRIOR ART CITED BY APPLICANT

(use as many sheets as necessary)

Sheet 2 of 3

Complete if Known	
Application Number	
Filing Date	2/1/02
First Named Inventor	Chi Bao Tai
Group Art Unit	
Examiner Name	
Attorney Docket Number	32008-pa

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	U.S. Patent Document Number	Kind Code[2] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	21	5,468,266		Bensalem, et al.	11-21-1995	
	22	5,912,192		Kim, et al.	06-15-1999	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Office[3]	Kind Code[5] (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

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[1] Unique citation designation number. [2] See attached Kinds of U.S. Patent Documents. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16, if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08B (6-95)

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Rev. 10/95	Patent and Trademark Office	Application Number	
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		Group Art Unit	
		Examiner Name	
Sheet 3 of 3		Attorney Docket Number	32008

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, country, where published, source.	T[2]
	23	Xiamen Brother International Trading Co., Ltd., Advertisement "Wooden Charcoal". Entire Ad	

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE OF THE INVENTION

Combustible Fuel Composition and Method

FIELD OF THE INVENTION

The following invention is generally related to instrumentalities and methodologies in combustible fuels. More specifically, the instant invention is directed to a method and apparatus for a combustible fuel that is easily lit by an external ignition source and is resistant to deterioration of effectiveness, thereby having a long shelf life.

BACKGROUND OF THE INVENTION

Many efforts have been made to produce fuels for barbecuing that are clean-burning, easy to handle, and easily ignitable. Charcoal, usually made from a wood base, is the most common component of fuels for barbecuing. Charcoals having vegetable and coal bases have also been used. Such fuels are difficult to ignite for cooking and often require the use of an ancillary flammable material, such as lighter fluid or newspaper, to create a flame of sufficient duration for the charcoal to ignite.

Previous innovations have involved the impregnation of charcoal with a more flammable compound, such as lighter fluid (or other volatile fluids, such as higher alkanes), waxes, or other oxidants that burn faster and more readily than charcoal. These penetrate only the outer surface of the charcoal. Those including volatile components or that are very easily oxidized are susceptible to dissipation over time, greatly reducing the effectiveness of those fuels. Other processes create a mixture of charcoal and an ignitable material, ultimately forming a homogeneous material that, overall, should be easier to burn. The point, however, of utilizing easily ignitable material is to achieve the initial burning of the charcoal. Once the charcoal reaches a certain level of combustion, it burns without further aid. Mixing the ignitable component throughout the fuel adds little overall benefit, because the benefits of ancillary ignitable components are superfluous once the combustion of the charcoal is underway. The use of volatile or easily combustible components throughout such fuels produces fumes during combustion, which may impart undesirable flavors to food cooked using such an article. Such fumes would be given off during the entire burning time, which is a considerable drawback to these types of fuels.

Another consideration for combustible fuel is efficient burning. Some fuels release a very large amount of heat during the initial stages, which tapers off to a much lower release rate during the time appropriate for cooking. It would be more efficient, and perhaps safer, to have a fuel whose heat release rate during ignition was less than the release rate during the optimal cooking time. In this way, the heat generated by a fuel would not be wasted in the startup process, but could be utilized in the form of longer cooking times.

By way of example, one commercially-available charcoal-based fuel exhibits the heat-release profile shown in FIG. 1. The graph depicts the rate of heat release per area of material. The graph peaks at 300-350 kilowatts per square meter during ignition of the material, dropping to a steady-state heat-release rate of approximately 40-50 kilowatts per square meter. This represents an initial ignition stage in which a large amount of heat is released very quickly before the release rate ramps down to a state in which cooking is appropriate.

The following prior art reflects the state of the art of which applicant is aware and is included herewith to discharge applicant's acknowledged duty to disclose relevant prior art. It is stipulated, however, that none of these references teach singly nor render obvious when considered in any conceivable combination the nexus of the instant invention as disclosed in greater detail hereinafter and as particularly claimed.

U.S. PATENT DOCUMENTS

PATENT NO.	ISSUE DATE	INVENTOR
2,816,013	December 10, 1957	Powell
2,876,084	March 3, 1959	Leggin

3,068,080	December 11, 1962	Ronzio
3,336,122	April 28, 1964	Smith
3,352,651	November 14, 1967	Davidson
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3,431,093	March 4, 1969	Kreinik
3,485,599	December 23, 1969	Richardson, et al.
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4,443,227	April 17, 1984	Avedikian
4,485,584	December 4, 1984	Raulerson, et al.
4,822,380	April 18, 1989	Young
4,834,774	May 30, 1989	Fay III, et al.
5,427,805	June 27, 1995	Crace
5,468,266	November 21, 1995	Bensalem, et al.
5,912,192	June 15, 1999	Kim, et al.

Kim teaches a three-layer combustible fuel article, comprising three distinct layers: a fire-igniting layer, a fire-catching layer, and a body layer. The body layer contains carbonized wood and a starch binder, and the other layers include less carbonized wood and more easily-ignitable components. Also included are optional air holes and optional grooves for visual appeal. *Inter alia*, Kim specifically recites that "No coal is used in the combustible articles." (col. 2, line 12)

The remaining citations diverge even further from the nexus of the instant invention.

SUMMARY OF THE INVENTION

The present invention addresses all of the most pervasive problems regarding charcoal-type fuels. In its essence, the present invention is embodied in a freestanding fuel article whose top surface is coated with an accelerant comprising barium nitrate and sodium nitrate, and in a method for making such a fuel article. The body comprises a homogeneous mixture of wood charcoal, anthracite coal, and a starch binder, and contains regularly-spaced vents that extend though its entire thickness. One of these vents is centrally located and of a cruciform shape. Above this vent is a fuse or lighting tab made out of a combustible material. Each fuel article is individually wrapped until use, preventing any dissipation of ignition materials during periods of nonuse. After initial ignition, the fuel is ready for cooking in less than five minutes.

The fuel is made by creating mixtures of the body portion and of the accelerant, and then introducing them successively into a forming device, compacting between each step. The vents are formed during the compaction step. The fuel is ejected from the forming device and then dried in a heated environment to remove any excess water from the mixture. The surface of the fuel is smoothed, the fuse or lighting tab is applied, and the fuel is then packaged, first individually, and then in groups better suited to larger cooking apparatus.

When the fuse or tab is lit, ignition is forced at the centrally-located vent. This vent has increased surface area due to the corner edges inherent in its shape, allowing quicker and more efficient ignition. The ignited area in the center of the fuel spreads out across the entire coating of accelerant, which includes some of the surface area extending down into the top of each vent. By the time the accelerant is entirely

consumed, the body has ignited and continues to burn. The vents through the body allow air to circulate and produce a chimney effect, and also provide preferential burning sites due to their greater surface area. This air circulation allows the body to burn evenly and more completely during its steady-state combustion period than if air circulation were not allowed. The concentration of accelerant at the top of the fuel directs the steady burning of the fuel from the top down.

The addition of anthracite coal to the body composition produces a cleaner-burning fuel than a pure charcoal fuel. The homogeneous dispersion of wood charcoal throughout the coal in the present invention provides a catalytic effect, allowing the coal to burn more easily than it would without the addition of charcoal. Additionally, the fuel according to the present invention has a much lower heat release rate than conventional charcoal fuel articles during the ignition stage, and the heat-release rate is lower during the ignition stage than during the steady-state cooking stage, both of which translate to longer burning times. The heat steady-state heat-release rate and the steady-state burning temperature of the fuel according to the present invention are also higher than that of commercially available charcoal fuel articles.

Compare FIG. 1, the profile of a commercially-available fuel material, described above, with FIG. 2, the profile of the fuel according to the present invention. At the ignition stage, the heat-release rate peaks at approximately 45-55 kilowatts per square meter before briefly dropping, and then increasing to its steady-state rate of approximately 60-65 kilowatts per square meter. This represents a lower release of energy during ignition, which translates into a longer burning time.

OBJECTS OF THE INVENTION

Accordingly, it is a primary object of the present invention to provide a new and novel combustible fuel that is easily lit by an external ignition source.

It is a further object of the present invention to provide a device and method which lends itself easily to methods of mass production.

It is a further object of the present invention to provide a device and method as characterized above which is less susceptible to deterioration of effectiveness before use.

It is a further object of the present invention to provide a device and method as characterized above which provides a longer steady-state response, which is representative of a protracted time for use.

It is a further object of the present invention to provide a device and method as characterized above which releases heat at a lower level at ignition than at steady-state, burning more efficiently to allow optimal cooking.

It is a further object of the present invention to provide a device and method as characterized above that is easy to handle and store.

It is a further object of the present invention to provide a device and method as characterized above that is easily adaptable to heating tasks of varying scope.

It is a further object of the present invention to provide a device and method as characterized above which provides a cleaner burning product than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that achieves a higher steady-state burning temperature than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that is ready for cooking in a very short time, typically about 3-10 minutes.

Viewed from a first vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing said mixture into a forming device, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of carbonaceous material, pressing said monolith of carbonaceous material including said accelerant, and drying said monolith of carbonaceous material such that said fixed form is freestanding.

Viewed from a second vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof, placing said mixture into a forming device, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of carbonaceous material, pressing said monolith of carbonaceous material including said accelerant, and drying said monolith of carbonaceous material such that said fixed form is freestanding.

Viewed from a third vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing said mixture into a forming device, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of carbonaceous material, pressing said monolith of carbonaceous material including said accelerant, drying said monolith of carbonaceous material such that said fixed form is freestanding, and affixing fusing means to said accelerant-covered surface.

Viewed from a fourth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing said mixture into a forming device, said forming device having means for creating venting means, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of carbonaceous material, pressing said monolith of carbonaceous material including said accelerant, and drying said monolith of carbonaceous material such that said fixed form is freestanding.

Viewed from a fifth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing said mixture into a forming device, said forming device having means for creating venting means, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of

carbonaceous material, said accelerant allowed to coat an interior surface of said venting means, pressing said monolith of carbonaceous material including said accelerant, and drying said monolith of carbonaceous material such that said fixed form is freestanding.

Viewed from a sixth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing said mixture into a forming device, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of carbonaceous material, pressing said monolith of carbonaceous material including said accelerant, drying said monolith of carbonaceous material such that said fixed form is freestanding, and encasing said fuel in a protective covering.

Viewed from a seventh vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof, placing said mixture into a forming device, said forming device having means for creating venting means, compacting said mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means, pressing said monolith of carbonaceous material including said accelerant, removing said monolith of carbonaceous material including said accelerant from said forming device, drying said monolith of carbonaceous material such that said fixed form is freestanding, affixing

fusing means to said accelerant-covered surface, and encasing said fuel in a protective covering.

Viewed from an eighth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, and an accelerant, said accelerant disposed on a portion of said surface of said monolith of carbonaceous material.

Viewed from a ninth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a top surface, said carbonaceous material comprising charcoal, starch, and anthracite coal, and an accelerant, said accelerant disposed on said top surface of said monolith of carbonaceous material.

Viewed from a tenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, said carbonaceous material comprising charcoal, a binder, and anthracite coal, and an accelerant, said accelerant disposed on said surface of said monolith of carbonaceous material and said accelerant further including anthracite coal.

Viewed from an eleventh vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a carbonaceous material having a surface, an accelerant, said accelerant on a portion of said surface of said carbonaceous material, venting means in said carbonaceous material, and fusing means, said fusing means on said portion of said carbonaceous material containing said accelerant.

Viewed from a twelfth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising: a carbonaceous material, said carbonaceous material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of said cylinder defined by a plurality of planes cutting through chords of said circle.

Viewed from a thirteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising a carbonaceous material, said carbonaceous material having zones of designated accelerated localized at venting means passing through said carbonaceous material.

Viewed from a fourteenth vantage point, it is an object of the present invention to provide A fuel for barbecuing, comprising in combination: a carbonaceous material having a surface, an accelerant, said accelerant disposed on a portion of said surface of said carbonaceous material, and fusing means, said fusing means disposed on said surface of said carbonaceous material coincidental with said accelerant.

Viewed from a fifteenth bantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and an accelarant coating a protion of said monolith of carbonaceous material, said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Viewed from a sixteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core

comprises 65-90% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 10-35% of the total mass of the fuel.

Viewed from a seventeenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a eighteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, said core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a nineteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, said core comprising 75-80% of the total mass of the fuel, and an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 20-25% of the total mass of the fuel.

These and other objects will be made manifest when considering the following detailed specification when taken in conjunction with the appended drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a heat release rate profile for a commercially-available fuel.

Figure 2 is a heat release rate profile for a fuel according to the present invention.

Figure 3 is a flowchart of the method according to the present invention.

Figure 4 is a depiction of the introduction of the body mixture into the molding device.

Figure 5 is a depiction of the compacting of the body mixture.

Figure 6 is a depiction of the introduction of the accelerant mixture into the molding device.

Figure 7 is a depiction of the compacting of the accelerant-covered body mixture.

Figure 8 is a depiction of the ejection of the compacted, shaped fuel article.

Figure 9 is a depiction of the method of using the fuel article of the present invention.

Figure 10 is a perspective view of the bottom of the fuel article according to the present invention.

Figure 11 is a top view of the fuel article according to the present invention.

Figure 12 is a bottom view of the fuel article according to the present invention.

Figure 13 is a cutaway view of the section defined in Figure 14.

Figure 14 is a perspective view of a set of six wrapped fuel articles according to the present invention.

Figure 15 is a top view of a set of six wrapped fuel articles according to the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Considering the drawings, wherein like reference numerals denote like parts throughout the various drawing figures, reference numeral 10 as shown in FIG. 9 is directed to the fuel article according to the present invention.

Referring to FIG. 3, the flow chart associated with the method of the present invention can be explored. Initially, each component of the fuel is in a separate container. A computer is used to measure and dispense the proper amount of each component into an appropriate mixing tank. The wood charcoal, anthracite coal, sodium nitrate, and barium nitrate are dry, and the binder mixture is starch preferably combined with water. In one tank, charcoal, coal, and the binder mixture are combined to produce a body mixture, preferably to the consistency of a viscous paste. In a second tank, charcoal, coal, sodium nitrate, barium nitrate, and the binder mixture are combined to produce an accelerant mixture. The amount of liquid present in the accelerant mixture may be varied to produce optimal results, as will be explained later in the process.

Referring now to FIGS. 4-8, the construction and operation of the molding device 30 used to form the fuel article 10 can be explored. The molding device 30 has a sleeve 32, to which is attached a base plate 34, preferably a solid plate. The base plate 34 is attached by a pivot to one end of the sleeve 32 such that the base plate 34 pivots outwardly from the sleeve 32, but in the same plane as the opening in the sleeve 32. At the other end of the sleeve is oriented a piston 36 containing shaped rods 38. The rods 38 preferably form and define vents in the fuel article 10, depicted in FIGS. 9-12 as a centrally-located cruciform-shaped aperture 12, with peripheral circular bores 14 and

peripheral elongated slots 16, arranged in an alternating pattern extending radially outward from the centrally-located cruciform-shaped aperture 12.

The molding device 30 is loaded (FIG. 4) with the body mixture to form the monolith 2 that comprises the long-burning body portion of the fuel. The mixture is compacted with the piston 36 (FIG. 5). The rods 38 attached to the piston 36 extend through the mixture to form the venting holes 12-16 in the fuel article 10, the shapes of the venting holes 12-16 corresponding to the various shapes of the rods 38. After the piston 36 is retracted, the accelerant mixture is introduced (FIG. 6) into the molding device 30. The viscosity of the accelerant mixture will determine the extent to which the accelerant penetrates the monolith 2 and the extent to which accelerant is coated within the venting holes 12-16 of the finished product. The piston 36 is again engaged (FIG. 7) for compacting, and the shaped fuel article 4 is then ejected (FIG. 8) through the end opposite of the piston 36, the exit path created by pivoting the base plate 34 outwardly from the sleeve 32.

The shaped fuel articles 4 are then loaded into drying trays, which are put into a kiln for drying. The kiln is preferably tunnel-shaped and extends approximately 40-50 meters. The entrance temperature of this kiln is approximately 150°C, and the air is dry. This atmosphere is maintained for 6.5 to 7 hours, at which time they are removed. The exit temperature is a very moist 50-60°C. The fuel article is then smoothed, and a fuse 18, formed as a substantially circular disc of fibrous material, is attached on a surface which had received the accelerant mixture. The fuse 18 is centrally-located on the fuel, above the cruciform-shaped aperture 12. The fuel article 10 is then packaged in a protective layer 20, preferably plastic shrinkwrap. After each fuel article 10 is

individually encased, as shown in FIGS. 10-13, a set of six fuel articles 25 (each individually wrapped) is arranged in a circular orientation, and the unit is wrapped as a set in a second protective layer 20, as in FIGS. 14-15.

The finished fuel article 10 is cylindrically-shaped. Referring to FIG. 11, the cross section of the short axis of the article 10 is preferably defined by a circle from which two portions have been excised. The excised portions are defined by two planes 22 coincidental with two chords of the circle. The planes 22, when extrapolated, form an included angle of approximately 30°. This angle permits orientation of six such articles to define a circle about a center portion which is free of the cooking medium. This center portion of the circle is the optimal area for cooking. If food is cooked over this center portion, drippings from the barbecued item will not drip onto the coals and produce smoke or other undesirable effects which tend to adversely affect the flavor of the barbecued item. Cooking directly over the fuel article 10 subjects the barbecued item to greater heat overall, which leads to greater cooking control when using fuel articles of the present invention.

The accelerant mixture includes barium and sodium nitrates, which are oxidizers that serve to ignite the body portion of the fuel article 10. When the accelerant mixture is applied and the resulting mass compacted, the accelerant mixture flows into the venting holes 12-16. The degree to which the inside surface is coated is directly related to the viscosity of the accelerant mixture. This process produces zones of designated accelerated heating, which include the accelerant-covered top surface, the profile of each of the venting holes 12-16 in the accelerant-covered surface, and the circumscribing peripheral walls of the fuel article 10. Thus, the function of the centrally-located

cruciform-shaped aperture 12 is to provide a surface that is more conducive to ignition than the rest of the fuel article 10. Ignition at the centrally-located cruciform-shaped aperture 12 is preferable due to the increased surface area provided by the several corners defined inside the vent. These areas are more conducive to ignition than any other area of the fuel article 12, having a greater surface area relative to its size. After ignition at the center, burning of the accelerant coating continues radially outward, due to the substantially even coating of the accelerant provided by the method of the present invention. When the burning contacts the peripheral venting holes 13-16, a similar phenomenon occurs, providing uniform burning by virtue of the substantially even spacing of the venting hold 13-16. Because all of the venting holes 12-16 extend through the entire fuel article 10, enhanced airflow is provided, encouraging even top-to-bottom burning of the fuel article 10. the inclusion of anthracite coal in the body of the fuel article 10 provides cleaner burning than charcoal alone, which is also useful in avoiding off-flavors and odors in the barbecued item.

The following table reflects the general ranges for both the accelerant components and body components. The table also reflects the preferred formulation for a specific briquette.

accelerant components	general ranges	specific briquette
weight percent	10-35%	20%
wood charcoal	45-80%	53%
anthracite coal	1-20%	10%
barium nitrate	10-32%	31%
sodium nitrate	0.05-5%	4%
startch (binder)	1-2.5%	2%
TOTAL COMPONENT %	**N/A**	**100%**
body components	**general ranges**	**specific briquette**
weight percent	65-90%	80%
wood charcoal	10-65%	33.50%
anthracite coal	35-90%	62.50%
startch (binder)	2.5-5%	4%
TOTAL COMPONENT %	**N/A**	**100%**

Moreover, having thus described the invention, it should be apparent that numerous structural modifications and adaptations may be resorted to without departing from the scope and fair meaning of the instant invention as set forth hereinabove and as described hereinbelow by the claims.

CLAIMS

I Claim:

✓ Claim 1 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

✓Claim 2 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

✓ Claim 3 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant,

drying said monolith of carbonaceous material such that said fixed form is freestanding, and

affixing fusing means to said accelerant-covered surface.

✓ Claim 4 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

✓ Claim 5 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

✓ Claim 6 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant,

drying said monolith of carbonaceous material such that said fixed form is freestanding, and

encasing said fuel in a protective covering.

✓ Claim 7 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means,

pressing said monolith of carbonaceous material including said accelerant,

removing said monolith of carbonaceous material including said accelerant from said forming device,

drying said monolith of carbonaceous material such that said fixed form is freestanding,

affixing fusing means to said accelerant-covered surface, and

encasing said fuel in a protective covering.

✓ Claim 8 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a surface, and

an accelerant, said accelerant disposed on a portion of said surface of said monolith of carbonaceous material.

Claim 9 - The fuel of claim 8 further comprising fusing means disposed on said accelerant-covered surface of said monolith of carbonaceous material.

Claim 10 - The fuel of claim 8 wherein said monolith of carbonaceous material includes anthracite coal.

Claim 11 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a top surface, said carbonaceous material comprising charcoal, starch, and anthracite coal, and

an accelerant, said accelerant disposed on said top surface of said monolith of carbonaceous material.

Claim 12 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a surface, said carbonaceous material comprising charcoal, a binder, and anthracite coal, and

an accelerant, said accelerant disposed on said surface of said monolith of carbonaceous material and said accelerant further including anthracite coal.

Claim 13 - A fuel for barbecuing, comprising, in combination:

a carbonaceous material having a surface,

an accelerant, said accelerant on a portion of said surface of said carbonaceous material,

venting means in said carbonaceous material, and

fusing means, said fusing means on said portion of said carbonaceous material containing said accelerant.

Claim 14 - The fuel of claim 13 wherein said fusing means overlies one of said venting means.

Claim 15 - The fuel of claim 14 wherein said venting means located under said lighting tab is a cruciform shaped-aperture.

Claim 16 - The fuel of claim 15 wherein said cruciform-shaped aperture located under said fusing means is centrally-located in said accelerant-covered portion of said carbonaceous material.

Claim 17 - The fuel of claim 16 wherein said carbonaceous material comprises anthracite coal and wood charcoal.

Claim 18 - The fuel of claim 17 wherein said carbonaceous material comprises 35-90% of anthracite coal and 10-65% of wood charcoal.

Claim 19 - The fuel of claim 18 wherein said accelerant comprises [range]% barium nitrate and 0.05 - 5% sodium nitrate.

Claim 20 - The fuel of claim 19 wherein said fuel is formed into a substantially circular shape.

Claim 21 - The fuel of claim 20 wherein said substantially circular shape further includes a plurality of chords defining portions to be removed.

Claim 22 - The fuel of claim 21 wherein said plurality of chords is located on one half of said substantially circular shape.

Claim 23 - The fuel of claim 22 wherein said plurality of chords further includes endpoints of a diameter of said substantially circular shape.

Claim 24 - The fuel of claim 23 wherein said venting means comprise a plurality of circular bores.

Claim 25 - The fuel of claim 24 wherein said venting means further comprise a plurality of elongated slots.

Claim 26 - The fuel of claim 25 wherein said plurality of circular bores and said plurality of elongated slots are arrayed in an alternating pattern radiating outward from said centrally-located cruciform-shaped aperture.

✓ Claim 27 - A fuel for barbecuing, comprising:

a carbonaceous material, said carbonaceous material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of said cylinder defined by a plurality of planes cutting through chords of said circle.

Claim 28 - The fuel of claim 27 wherein said plurality of planes is two, having an included angle of 30°, allowing nesting in a substantially toroidal shape.

✓ Claim 29 - A fuel for barbecuing, comprising:

a carbonaceous material, said carbonaceous material having zones of designated accelerated localized at venting means passing through said carbonaceous material.

Claim 30 - The fuel of claim 29 wherein said zones of designated accelerated heating include a circumscribing peripheral wall of said fuel and bores passing through said fuel defining said venting means and having an accelerant thereon.

✓Claim 31 - A fuel for barbecuing, comprising in combination:

a carbonaceous material having a surface,

an accelerant, said accelerant disposed on a portion of said surface of said carbonaceous material, and

fusing means, said fusing means disposed on said surface of said carbonaceous material coincidental with said accelerant.

✓ Claim 32 - A fuel for barbecuing, comprising, in combinatuion:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

✓ Claim 33 - A fuel for barbecuing, comprising, in combination:

a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core comprises 65-90% of the total mass of the fuel, and

an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 10-35% of the total mass of the fuel.

✓ Claim 34 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

✓ Claim 35 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

✓ Claim 36 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 75-80% of the total mass of the fuel, and

an accelerant applied predominantly to at lease one facet of said core, said accelerant comprising 20-25% of the total mass of the fuel.

ABSTRACT OF THE DISCLOSURE

A fuel article, suitable for barbecuing, allowing greater burning efficiency and the method of making such a fuel article. The fuel article includes anthracite coal for cleaner burning and utilizes an accelerant covering containing nitrates to be amenable to easy ignition.

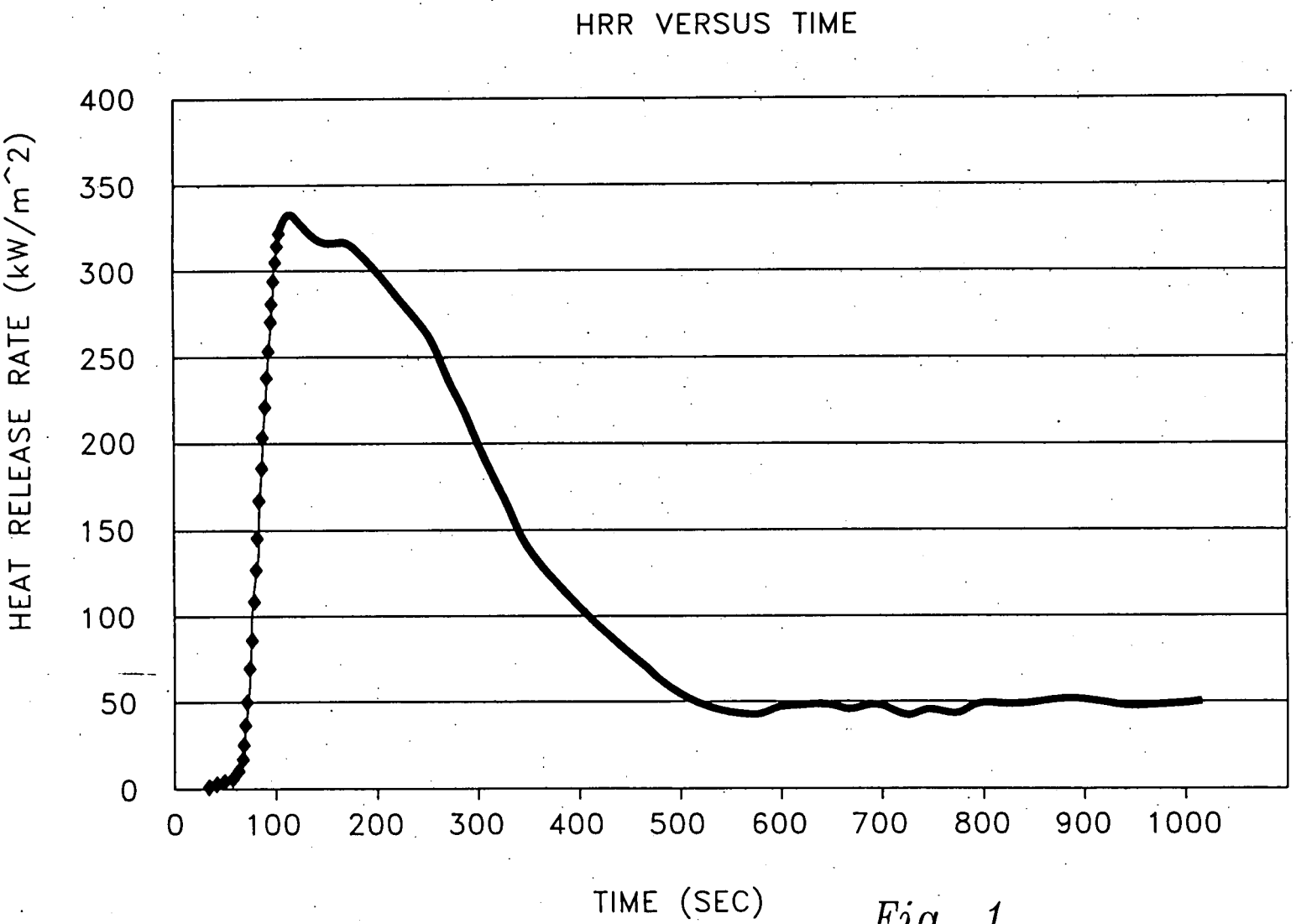


Fig. 1
(PRIOR ART)

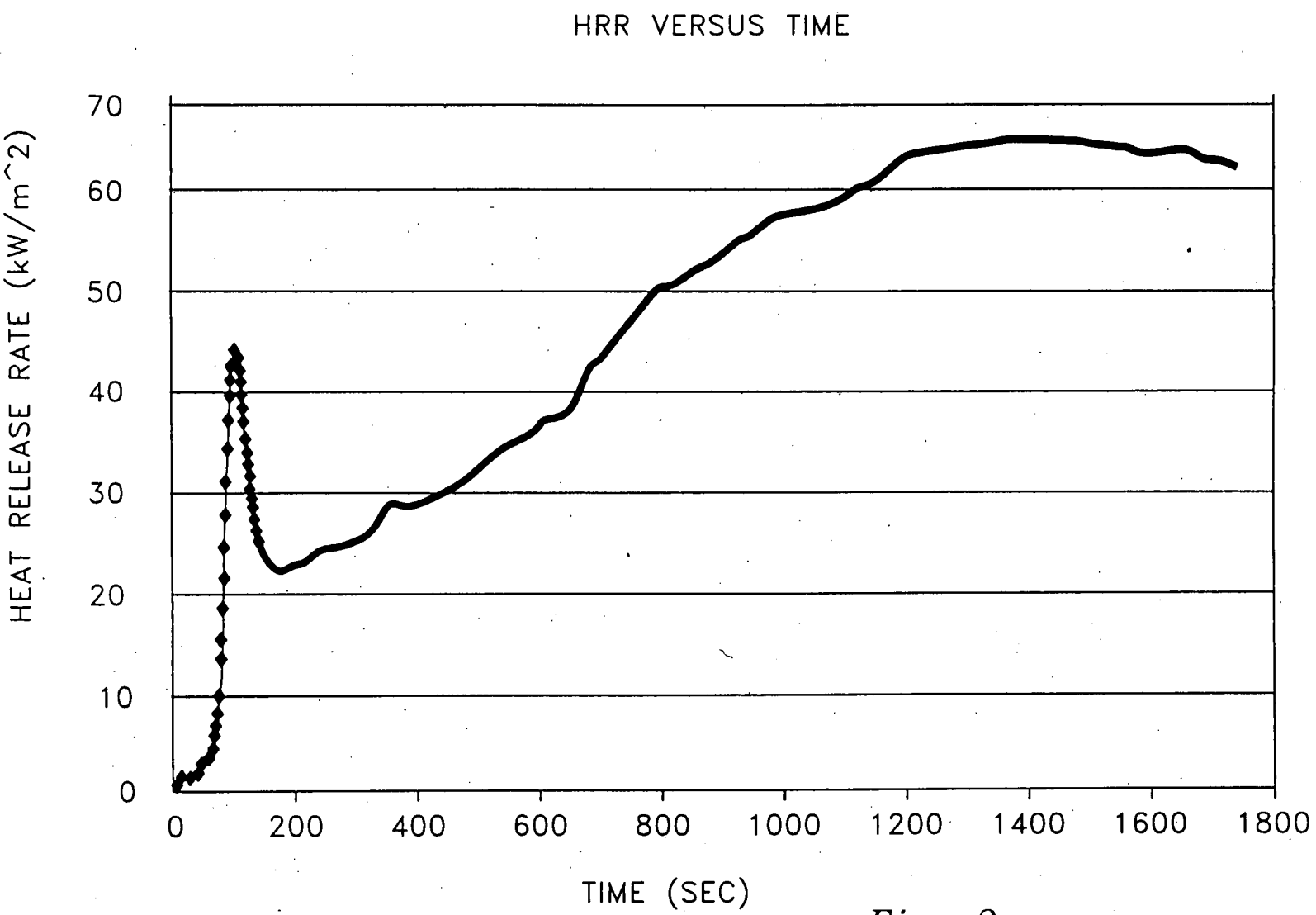

HRR VERSUS TIME
HEAT RELEASE RATE (kW/m^2)
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
TIME (SEC)

Fig. 2

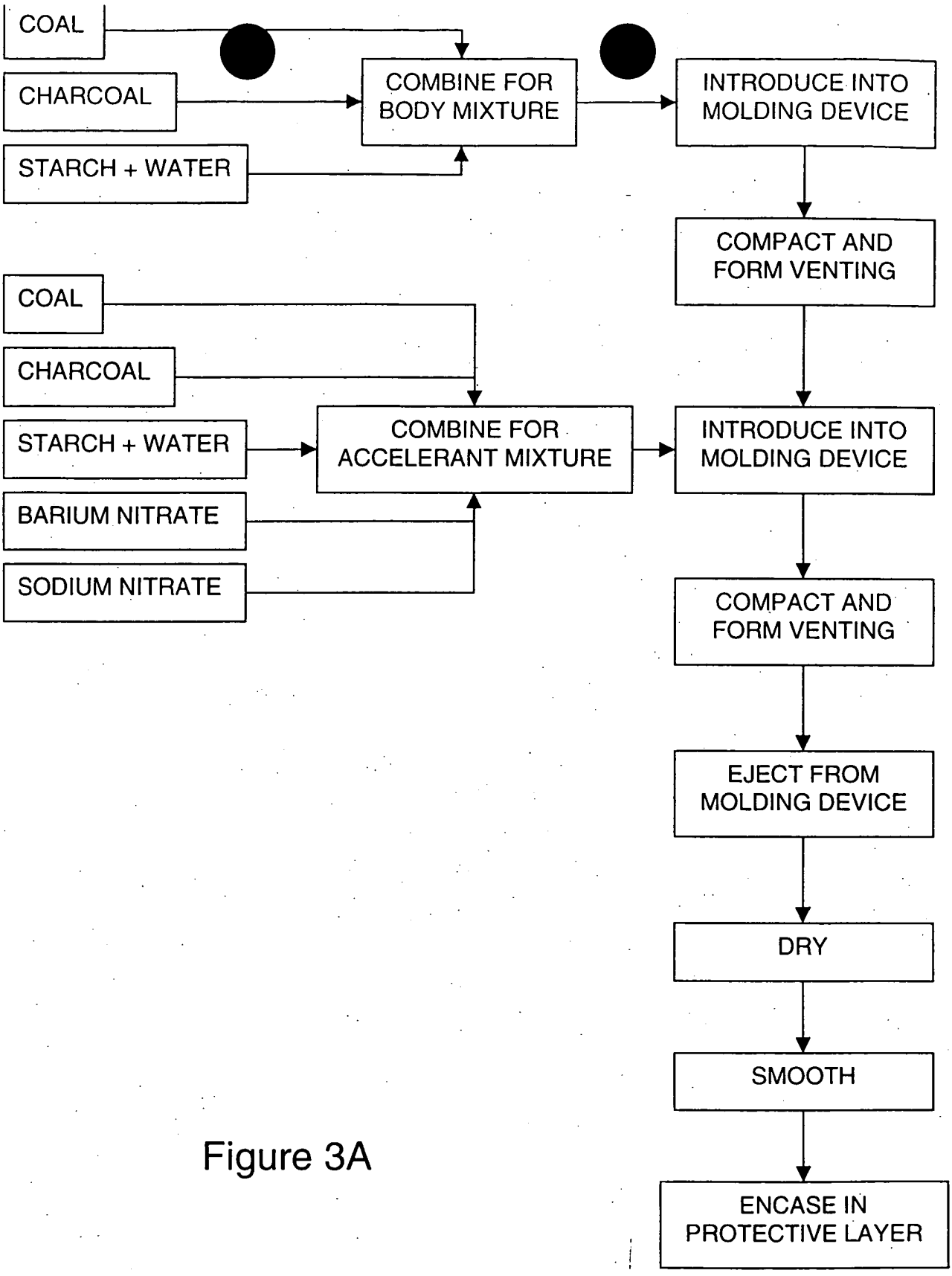

COAL
CHARCOAL
STARCH + WATER
COMBINE FOR BODY MIXTURE
INTRODUCE INTO MOLDING DEVICE
COMPACT AND FORM VENTING
COAL
CHARCOAL
STARCH + WATER
BARIUM NITRATE
SODIUM NITRATE
COMBINE FOR ACCELERANT MIXTURE
INTRODUCE INTO MOLDING DEVICE
COMPACT AND FORM VENTING
EJECT FROM MOLDING DEVICE
DRY
SMOOTH
ENCASE IN PROTECTIVE LAYER

Figure 3A

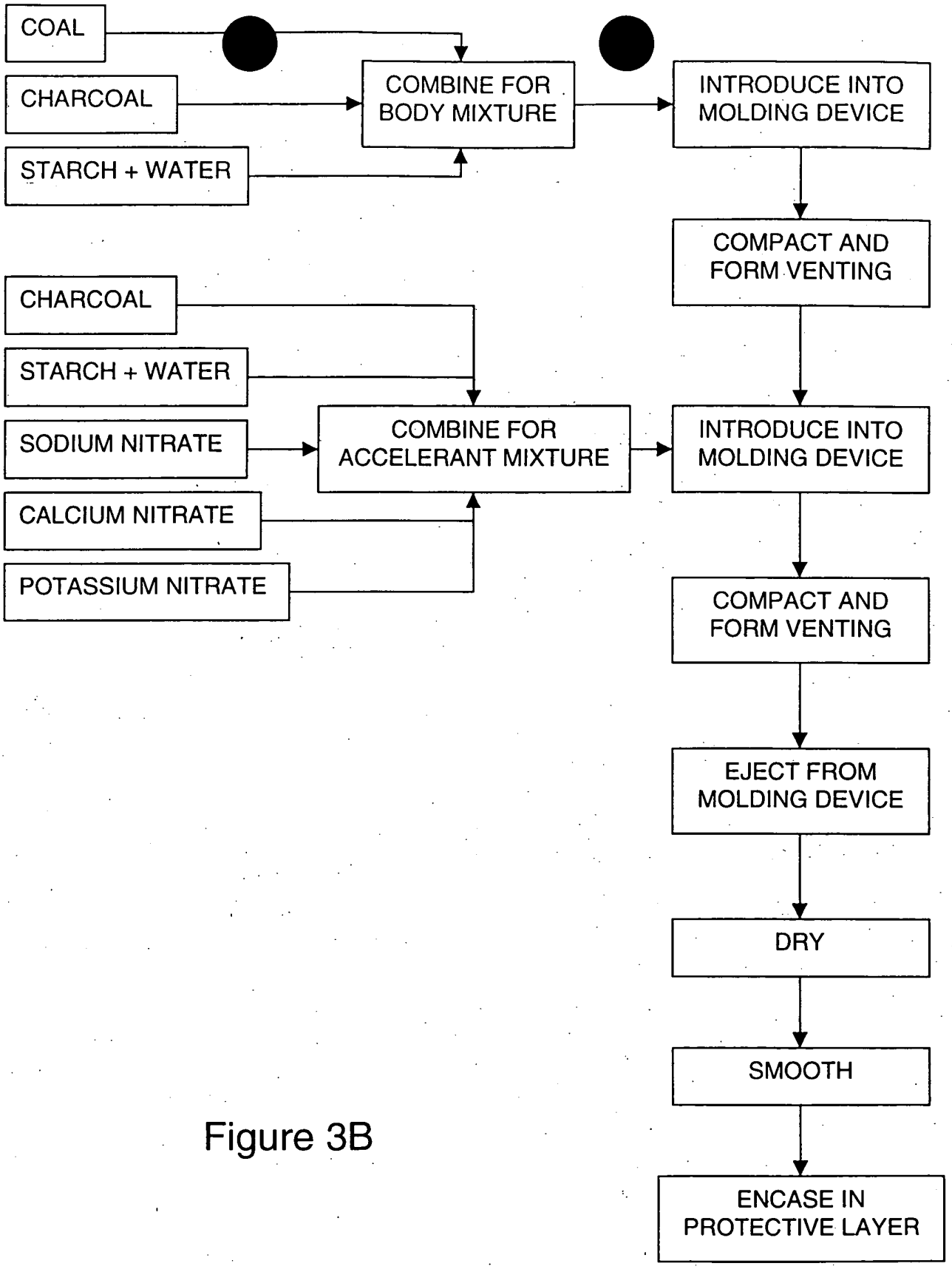

COAL
CHARCOAL
STARCH + WATER
COMBINE FOR BODY MIXTURE
INTRODUCE INTO MOLDING DEVICE
COMPACT AND FORM VENTING
CHARCOAL
STARCH + WATER
SODIUM NITRATE
CALCIUM NITRATE
POTASSIUM NITRATE
COMBINE FOR ACCELERANT MIXTURE
INTRODUCE INTO MOLDING DEVICE
COMPACT AND FORM VENTING
EJECT FROM MOLDING DEVICE
DRY
SMOOTH
ENCASE IN PROTECTIVE LAYER

Figure 3B

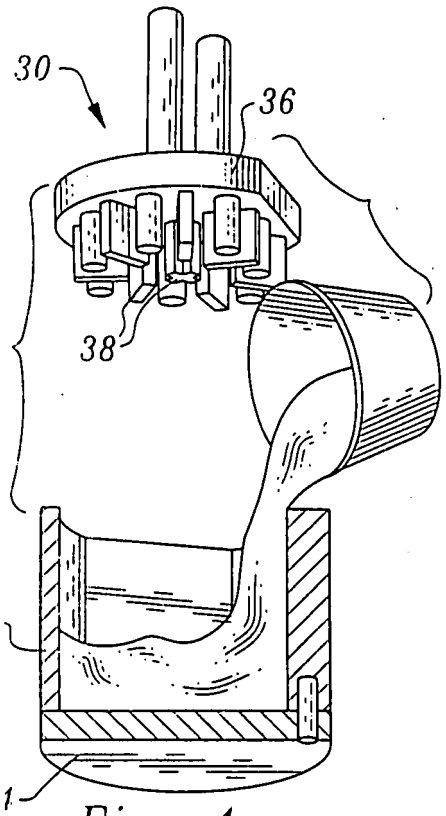


Fig. 4

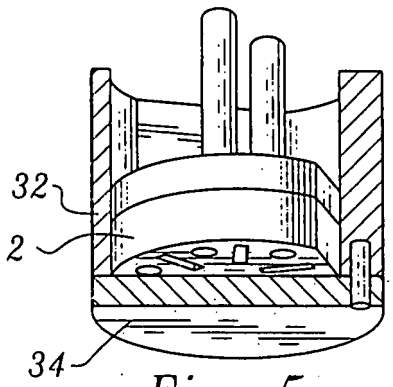


Fig. 5

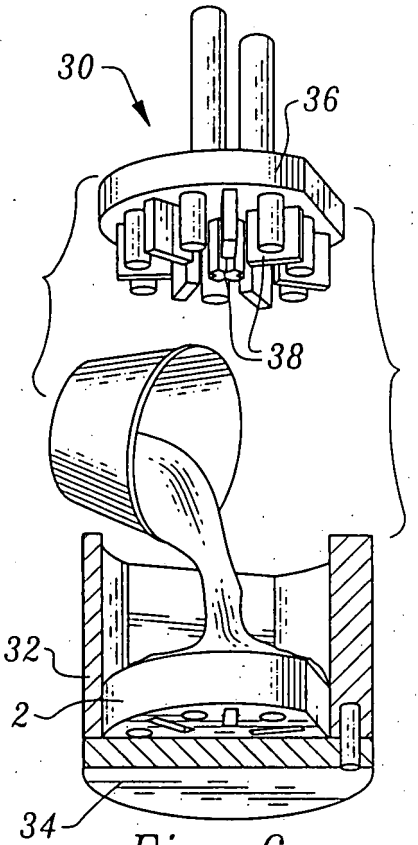


Fig. 6

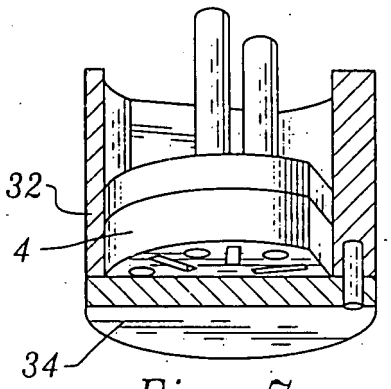


Fig. 7

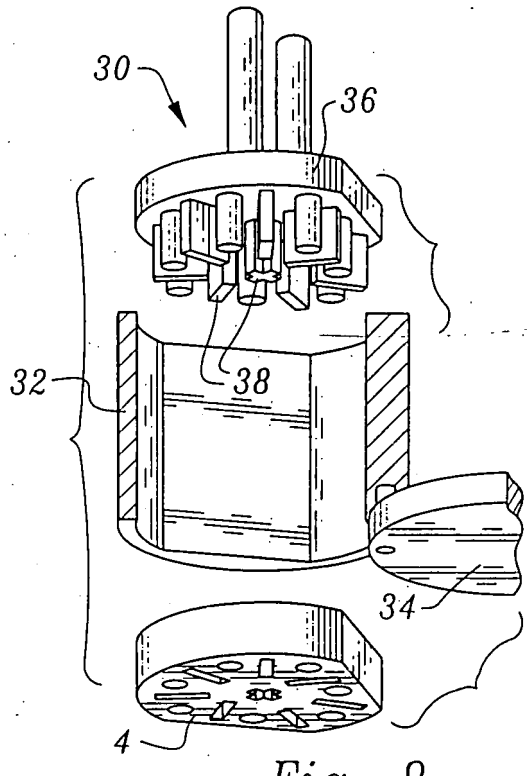


Fig. 8

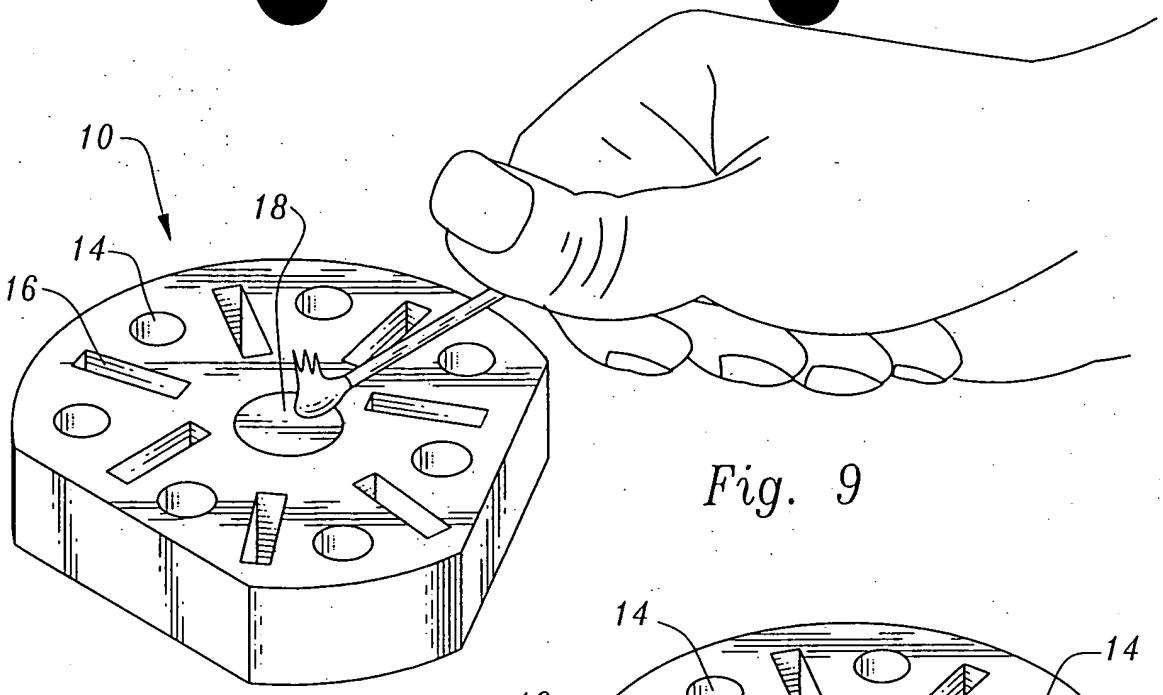


Fig. 9

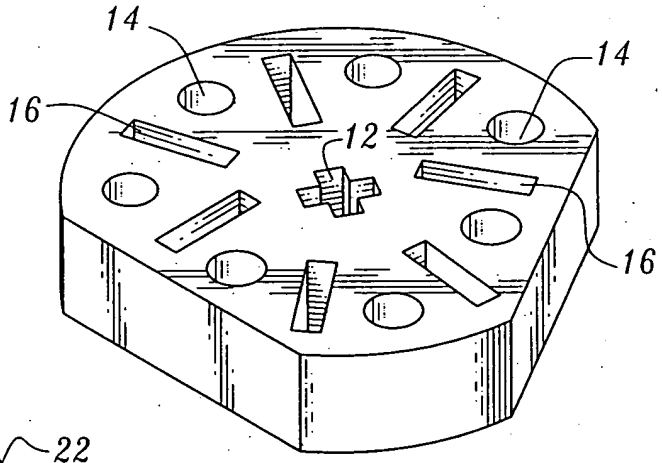


Fig. 10

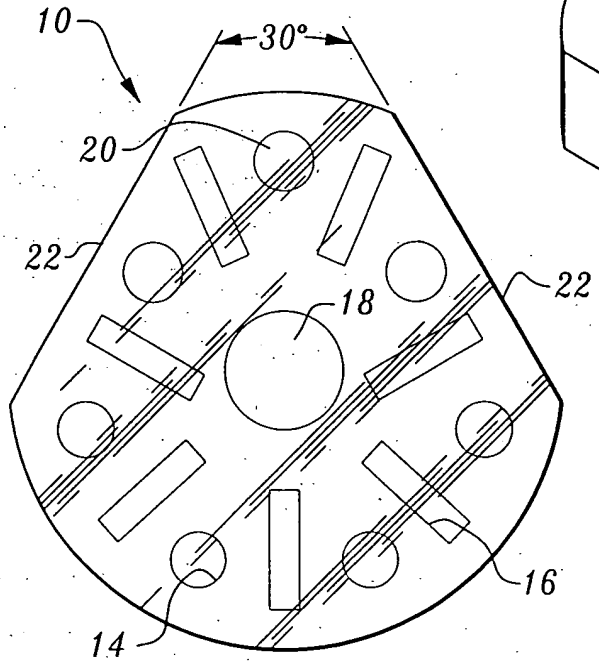


Fig. 11

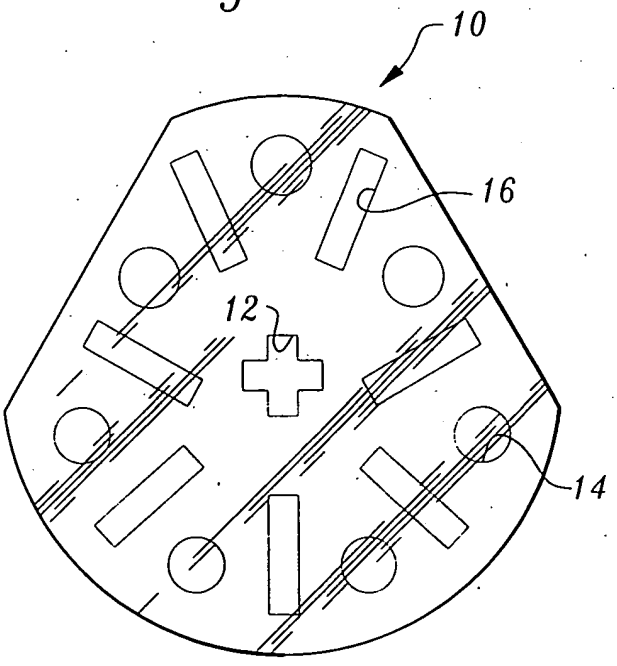


Fig. 12

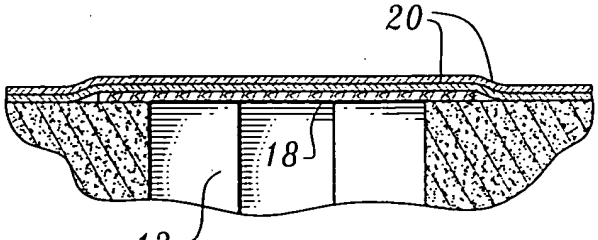


Fig. 13

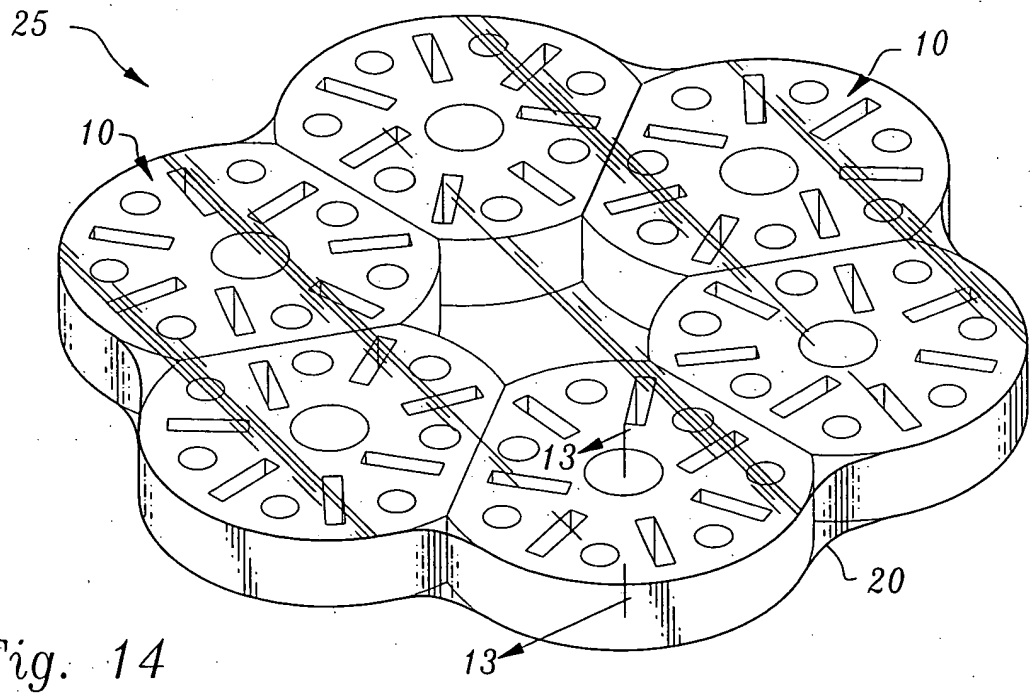


Fig. 14

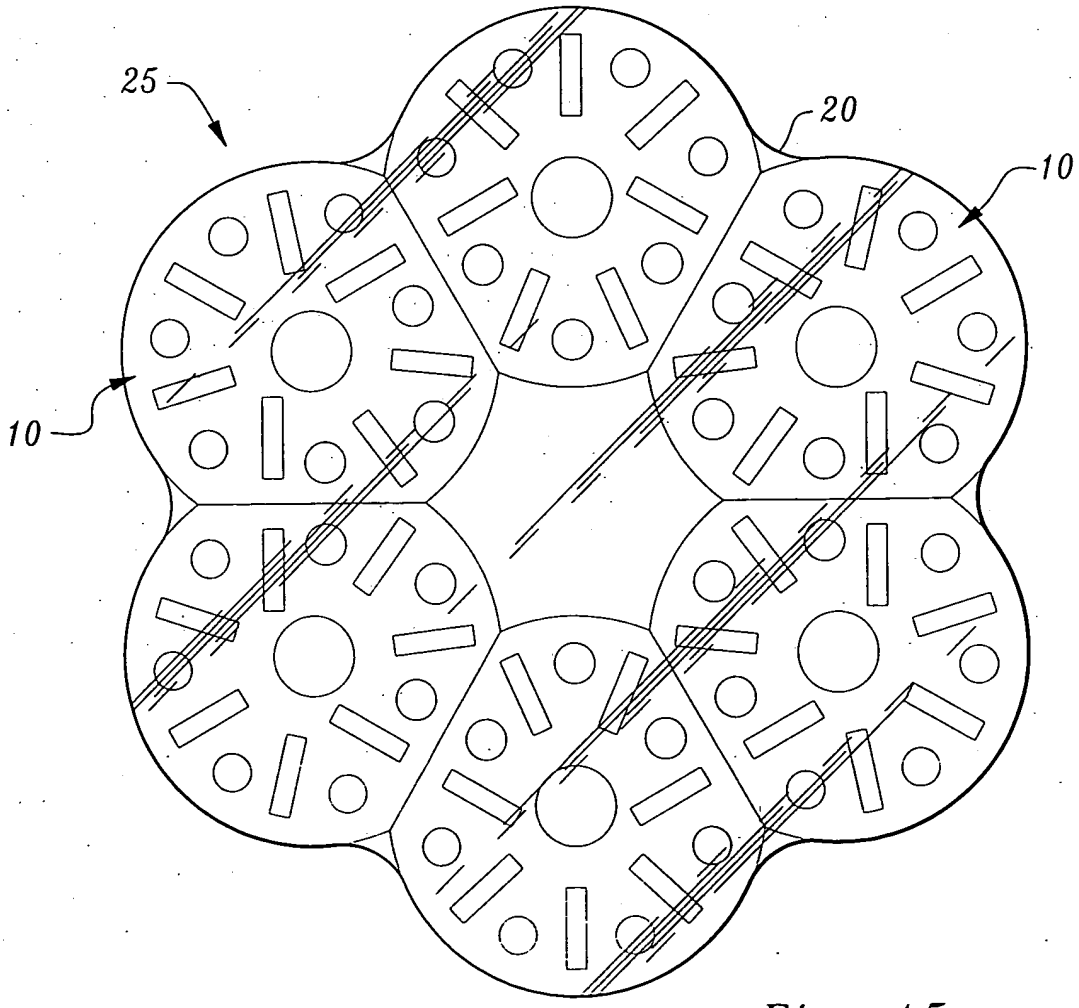


Fig. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	Cui Bao Tai
FOR:	Combustible Fuel Composition and Method

To: Commissioner of Patents and Trademarks
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Before a First Office Action on the merits, kindly enter the following amendments:

IN THE SPECIFICATION

A substitute specification is provided, pursuant to 37 C.F.R. §1.121(b)(3).

A marked up version of the previous specification is also provided.

IN THE CLAIMS

Kindly Amend the Claims as Follows:

Claim 19 (amended) - The fuel of claim 18 wherein said accelerant comprises [[range]] 10-32% barium nitrate and 0.05-5% sodium nitrate.

Claim 32 (amended) - A fuel for barbecuing, comprising, in combinat[u]ion:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Kindly Add the New Claims as Follows:

Claim 37 (new) - The fuel of claim 17 wherein said carbonaceous material comprises 33-86% of anthracite coal and 10-65% of wood charcoal.

Claim 38 (new) - The fuel of claim 18 wherein said accelerant comprises 3.05-22% calcium nitrate, 2.5-22% potassium nitrate and 0.05 - 4% sodium nitrate.

Claim 39 (new) - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 32-86% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Claim 40 (new) - A fuel for barbecuing, comprising, in combination:

a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core comprises 65-94% of the total mass of the fuel, and

an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 6-35% of the total mass of the fuel.

Claim 41 (new) - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Claim 42 (new) - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Claim 43 (new) - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 85-95% of the total mass of the fuel, and

an accelerant applied predominantly to at lease one facet of said core, said accelerant comprising 5-25% of the total mass of the fuel.

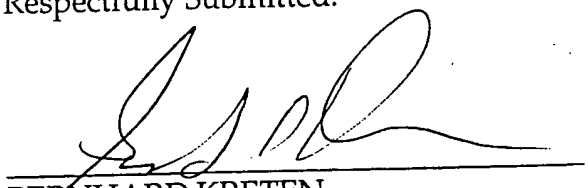
REMARKS

This Preliminary Amendment is provided before receipt of any substantive Office Action on the merits in this case and is provided to rectify various minor typographical inexactitudes and to present new and amended claims for the Examiner's kind consideration.

In view of the foregoing, it is respectfully requested that the Examiner enter these amendments to this case.

Dated: February 1, 2002

Respectfully Submitted:



BERNHARD KRETEN
Applicant's Attorney
Telephone (916) 921-6181
Registration No.: 27,037

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE OF THE INVENTION

Combustible Fuel Composition and Method

This application is a continuation-in-part of application number 09/881,310, filed June 13, 2001, status: pending.

FIELD OF THE INVENTION

The following invention is generally related to instrumentalities and methodologies in combustible fuels. More specifically, the instant invention is directed to a method and apparatus for a combustible fuel that is easily lit by an external ignition source and is resistant to deterioration of effectiveness, thereby having a long shelf life.

BACKGROUND OF THE INVENTION

Many efforts have been made to produce fuels for barbecuing that are clean-burning, easy to handle, and easily ignitable. Charcoal, usually made from a wood base, is the most common component of fuels for barbecuing. Charcoals having vegetable and coal bases have also been used. Such fuels are difficult to ignite for cooking and often require the use of an ancillary flammable material, such as lighter fluid or newspaper, to create a flame of sufficient duration for the charcoal to ignite.

Previous innovations have involved the impregnation of charcoal with a more flammable compound, such as lighter fluid (or other volatile fluids, such as higher alkanes), waxes, or other oxidants that burn faster and more readily than charcoal. These penetrate only the outer surface of the charcoal. Those including volatile components or that are very easily oxidized are susceptible to dissipation over time, greatly reducing the effectiveness of those fuels. Other processes create a mixture of charcoal and an ignitable material, ultimately forming a homogeneous material that, overall, should be easier to burn. The point, however, of utilizing easily ignitable material is to achieve the initial burning of the charcoal. Once the charcoal reaches a certain level of combustion, it burns without further aid. Mixing the ignitable component throughout the fuel adds little overall benefit, because the benefits of ancillary ignitable components are superfluous once the combustion of the charcoal is underway. The use of volatile or easily combustible components throughout such fuels produces fumes during combustion, which may impart undesirable flavors to food cooked using such an article. Such fumes would be given off during the entire burning time, which is a considerable drawback to these types of fuels.

Another consideration for combustible fuel is efficient burning. Some fuels release a very large amount of heat during the initial stages, which tapers off to a much lower release rate during the time appropriate for cooking. It would be more efficient, and perhaps safer, to have a fuel whose heat release rate during ignition was less than the release rate during the optimal cooking time. In this way, the heat generated by a fuel would not be wasted in the startup process, but could be utilized in the form of longer cooking times.

By way of example, one commercially-available charcoal-based fuel exhibits the heat-release profile shown in FIG. 1. The graph depicts the rate of heat release per area of material. The graph peaks at 300-350 kilowatts per square meter during ignition of the material, dropping to a steady-state heat-release rate of approximately 40-50 kilowatts per square meter. This represents an initial ignition stage in which a large amount of heat is released very quickly before the release rate ramps down to a state in which cooking is appropriate.

The following prior art reflects the state of the art of which applicant is aware and is included herewith to discharge applicant's acknowledged duty to disclose relevant prior art. It is stipulated, however, that none of these references teach singly nor render obvious when considered in any conceivable combination the nexus of the instant invention as disclosed in greater detail hereinafter and as particularly claimed.

U.S. PATENT DOCUMENTS

PATENT NO.	ISSUE DATE	INVENTOR
2,816,013	December 10, 1957	Powell
2,876,084	March 3, 1959	Leggin

3,068,080	December 11, 1962	Ronzio
3,336,122	April 28, 1964	Smith
3,352,651	November 14, 1967	Davidson
3,395,002	July 30, 1968	Winnicki, et al.
3,431,093	March 4, 1969	Kreinik
3,485,599	December 23, 1969	Richardson, et al.
3,934,986	January 27, 1976	Avedikian
3,955,937	May 11, 1976	Whang
3,988,121	October 26, 1976	Leveskis
4,118,202	October 3, 1978	Scholes
4,165,968	August 28, 1979	Duncan
4,167,398	September 11, 1979	Hughes, et al.
4,437,862	March 20, 1984	Whang
4,443,227	April 17, 1984	Avedikian
4,485,584	December 4, 1984	Raulerson, et al.
4,822,380	April 18, 1989	Young
4,834,774	May 30, 1989	Fay III, et al.
5,427,805	June 27, 1995	Crace
5,468,266	November 21, 1995	Bensalem, et al.
5,912,192	June 15, 1999	Kim, et al.

Kim teaches a three-layer combustible fuel article, comprising three distinct layers: a fire-igniting layer, a fire-catching layer, and a body layer. The body layer contains carbonized wood and a starch binder, and the other layers include less carbonized wood and more easily-ignitable components. Also included are optional air holes and optional grooves for visual appeal. *Inter alia*, Kim specifically recites that "No coal is used in the combustible articles." (col. 2, line 12)

The remaining citations diverge even further from the nexus of the instant invention.

SUMMARY OF THE INVENTION

The present invention addresses all of the most pervasive problems regarding charcoal-type fuels. In its essence, the present invention is embodied in a freestanding fuel article whose top surface is coated with an accelerant comprising sodium nitrate and either barium nitrate or a combination of sodium and potassium nitrates, and in a method for making such a fuel article. The body comprises a homogeneous mixture of wood charcoal, anthracite coal, and a starch binder, and contains regularly-spaced vents that extend though its entire thickness. One of these vents is centrally located and of a cruciform shape. If desired, a fuse or lighting tab made out of a combustible material may be located above this vent. Each fuel article is individually wrapped until use, preventing any dissipation of ignition materials during periods of nonuse. After initial ignition, the fuel is ready for cooking in less than five minutes.

The fuel is made by creating mixtures of the body portion and of the accelerant, and then introducing them successively into a forming device, compacting between each step. The vents are formed during the compaction step. The fuel is ejected from the forming device and then dried in a heated environment to remove any excess water from the mixture. The surface of the fuel is smoothed, the fuse or lighting tab, if desired, is applied, and the fuel is then packaged, first individually, and then in groups better suited to larger cooking apparatus.

Ignition of the fuel occurs by lighting at the centrally-located vent. The fuel may be directly ignited on its accelerant-covered surface, or it may be lighted on a fuse or lighting tab present at the central location for convenience. This vent has increased surface area due to the corner edges inherent in its shape, allowing quicker and more

efficient ignition. The ignited area in the center of the fuel spreads out across the entire coating of accelerant, which includes some of the surface area extending down into the top of each vent. By the time the accelerant is entirely consumed, the body has ignited and continues to burn. The vents through the body allow air to circulate and produce a chimney effect, and also provide preferential burning sites due to their greater surface area. This air circulation allows the body to burn evenly and more completely during its steady-state combustion period than if air circulation were not allowed. The concentration of accelerant at the top of the fuel directs the steady burning of the fuel from the top down.

The addition of anthracite coal to the body composition produces a cleaner-burning fuel than a pure charcoal fuel. The homogeneous dispersion of wood charcoal throughout the coal in the present invention provides a catalytic effect, allowing the coal to burn more easily than it would without the addition of charcoal. Additionally, the fuel according to the present invention has a much lower heat release rate than conventional charcoal fuel articles during the ignition stage, and the heat-release rate is lower during the ignition stage than during the steady-state cooking stage, both of which translate to longer burning times. The steady-state heat-release rate and the steady-state burning temperature of the fuel according to the present invention are also higher than that of commercially available charcoal fuel articles.

Compare FIG. 1, the profile of a commercially-available fuel material, described above, with FIG. 2, the profile of the fuel according to the present invention. At the ignition stage, the heat-release rate peaks at approximately 45-55 kilowatts per square meter before briefly dropping, and then increasing to its steady-state rate of

approximately 60-65 kilowatts per square meter. This represents a lower release of energy during ignition, which translates into a longer burning time.

OBJECTS OF THE INVENTION

Accordingly, it is a primary object of the present invention to provide a new and novel combustible fuel that is easily lit by an external ignition source.

It is a further object of the present invention to provide a device and method which lends itself easily to methods of mass production.

It is a further object of the present invention to provide a device and method as characterized above which is less susceptible to deterioration of effectiveness before use.

It is a further object of the present invention to provide a device and method as characterized above which provides a longer steady-state response, which is representative of a protracted time for use.

It is a further object of the present invention to provide a device and method as characterized above which releases heat at a lower level at ignition than at steady-state, burning more efficiently to allow optimal cooking.

It is a further object of the present invention to provide a device and method as characterized above that is easy to handle and store.

It is a further object of the present invention to provide a device and method as characterized above that is easily adaptable to heating tasks of varying scope.

It is a further object of the present invention to provide a device and method as characterized above which provides a cleaner burning product than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that achieves a higher steady-state burning temperature than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that is ready for cooking in a very short time, typically about 3-10 minutes.

Viewed from a first vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing the mixture into a forming device, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of carbonaceous material, pressing the monolith of carbonaceous material including the accelerant, and drying the monolith of carbonaceous material such that the fixed form is freestanding.

Viewed from a second vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, the mixture containing anthracite coal as a component thereof, placing the mixture into a forming device, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of carbonaceous material, pressing the monolith of carbonaceous material including the accelerant, and drying the monolith of carbonaceous material such that the fixed form is freestanding.

Viewed from a third vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing the mixture into a forming device, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of carbonaceous material, pressing the monolith of carbonaceous material including the accelerant, drying the monolith of carbonaceous material such that the fixed form is freestanding, and affixing fusing means to the accelerant-covered surface.

Viewed from a fourth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing the mixture into a forming device, the forming device having means for creating venting means, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of carbonaceous material, pressing the monolith of carbonaceous material including the accelerant, and drying the monolith of carbonaceous material such that the fixed form is freestanding.

Viewed from a fifth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing the mixture into a forming device, the forming device having means for creating venting means, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of

carbonaceous material, the accelerant allowed to coat an interior surface of the venting means, pressing the monolith of carbonaceous material including the accelerant, and drying the monolith of carbonaceous material such that the fixed form is freestanding.

Viewed from a sixth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing the mixture into a forming device, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of carbonaceous material, pressing the monolith of carbonaceous material including the accelerant, drying the monolith of carbonaceous material such that the fixed form is freestanding, and encasing the fuel in a protective covering.

Viewed from a seventh vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, the mixture containing anthracite coal as a component thereof, placing the mixture into a forming device, the forming device having means for creating venting means, compacting the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into the forming device containing the monolith of carbonaceous material, the accelerant allowed to coat an interior surface of the venting means, pressing the monolith of carbonaceous material including the accelerant, removing the monolith of carbonaceous material including the accelerant from the forming device, drying the monolith of carbonaceous material such that the fixed form is freestanding, affixing

fusing means to the accelerant-covered surface, and encasing the fuel in a protective covering.

Viewed from an eighth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, and an accelerant, the accelerant disposed on a portion of the surface of the monolith of carbonaceous material.

Viewed from a ninth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a top surface, the carbonaceous material comprising charcoal, starch, and anthracite coal, and an accelerant, the accelerant disposed on the top surface of the monolith of carbonaceous material.

Viewed from a tenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, the carbonaceous material comprising charcoal, a binder, and anthracite coal, and an accelerant, the accelerant disposed on the surface of the monolith of carbonaceous material and the accelerant further including anthracite coal.

Viewed from an eleventh vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a carbonaceous material having a surface, an accelerant, the accelerant on a portion of the surface of the carbonaceous material, venting means in the carbonaceous material, and fusing means, the fusing means on the portion of the carbonaceous material containing the accelerant.

Viewed from a twelfth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising: a carbonaceous material, the carbonaceous

material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of the cylinder defined by a plurality of planes cutting through chords of the circle.

Viewed from a thirteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising a carbonaceous material, the carbonaceous material having zones of designated accelerated heating localized at venting means passing through the carbonaceous material.

Viewed from a fourteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising in combination: a carbonaceous material having a surface, an accelerant, the accelerant disposed on a portion of the surface of the carbonaceous material, and fusing means, the fusing means disposed on the surface of the carbonaceous material coincidental with the accelerant.

Viewed from a fifteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, the monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and an accelerant coating a portion of the monolith of carbonaceous material, the accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Viewed from a sixteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein the core comprises 65-90% of the total mass of the fuel, and an accelerant predominantly applied to at least

one facet of the core, wherein the accelerant comprises 10-35% of the total mass of the fuel.

Viewed from a seventeenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a eighteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a nineteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 75-80% of the total mass of the fuel, and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 20-25% of the total mass of the fuel.

Viewed from a twentieth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, the monolith of carbonaceous material comprising 10-65% wood charcoal, 33-86% anthracite coal, and a binder; and an accelerant coating a portion of the monolith of

carbonaceous material, the accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Viewed from a twenty-first vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein the core comprises 65-94% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of the core, wherein the accelerant comprises 6-35% of the total mass of the fuel.

Viewed from a twenty-second vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-third vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of said core, the accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-fourth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 85-95% of the total mass of the fuel, and an

accelerant applied predominantly to at lease one facet of the core, the accelerant comprising 5-25% of the total mass of the fuel.

These and other objects will be made manifest when considering the following detailed specification when taken in conjunction with the appended drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a heat release rate profile for a commercially-available fuel.

Figure 2 is a heat release rate profile for a fuel according to the present invention.

Figures 3A and 3B are flowcharts of two embodiments of the method according to the present invention.

Figure 4 is a depiction of the introduction of the body mixture into the molding device.

Figure 5 is a depiction of the compacting of the body mixture.

Figure 6 is a depiction of the introduction of the accelerant mixture into the molding device.

Figure 7 is a depiction of the compacting of the accelerant-covered body mixture.

Figure 8 is a depiction of the ejection of the compacted, shaped fuel article.

Figure 9 is a depiction of the method of using the fuel article of the present invention. An optional fuse or lighting tab is present.

Figure 10 is a perspective view of the bottom of the fuel article according to the present invention.

Figure 11 is a top view of the fuel article according to the present invention.

Figure 12 is a bottom view of the fuel article according to the present invention.

Figure 13 is a cutaway view of the section defined in Figure 14.

Figure 14 is a perspective view of a set of six wrapped fuel articles according to the present invention.

Figure 15 is a top view of a set of six wrapped fuel articles according to the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Considering the drawings, wherein like reference numerals denote like parts throughout the various drawing figures, reference numeral 10 as shown in FIG. 9 is directed to the fuel article according to the present invention.

Referring to FIGS. 3A,3B, the flow charts associated with the method of the present invention can be explored. Initially, each component of the fuel is in a separate container. A computer is used to measure and dispense the proper amount of each component into an appropriate mixing tank. The wood charcoal, anthracite coal, and nitrates are dry, and the binder mixture is starch preferably combined with water. In one tank, charcoal, coal, and the binder mixture are combined to produce a body mixture, preferably to the consistency of a viscous paste. In a second tank, either charcoal, coal, sodium nitrate, barium nitrate, and the binder mixture (FIG. 3A) or charcoal, sodium nitrate, potassium nitrate, calcium nitrate, and the binder mixture (FIG. 3B) are combined to produce an accelerant mixture. The amount of liquid present in the accelerant mixture may be varied to produce optimal results, as will be explained later in the process.

Referring now to FIGS. 4-8, the construction and operation of the molding device 30 used to form the fuel article 10 can be explored. The molding device 30 has a sleeve 32, to which is attached a base plate 34, preferably a solid plate. The base plate 34 is attached by a pivot to one end of the sleeve 32 such that the base plate 34 pivots outwardly from the sleeve 32, but in the same plane as the opening in the sleeve 32. At the other end of the sleeve is oriented a piston 36 containing shaped rods 38. The rods 38 preferably form and define vents in the fuel article 10, depicted in FIGS. 9-12 as a

centrally-located cruciform-shaped aperture 12, with peripheral circular bores 14 and peripheral elongated slots 16, arranged in an alternating pattern extending radially outward from the centrally-located cruciform-shaped aperture 12.

The molding device 30 is loaded (FIG. 4) with the body mixture to form the monolith 2 that comprises the long-burning body portion of the fuel. The mixture is compacted with the piston 36 (FIG. 5). The rods 38 attached to the piston 36 extend through the mixture to form the venting holes 12-16 in the fuel article 10, the shapes of the venting holes 12-16 corresponding to the various shapes of the rods 38. After the piston 36 is retracted, the accelerant mixture is introduced (FIG. 6) into the molding device 30. The viscosity of the accelerant mixture will determine the extent to which the accelerant penetrates the monolith 2 and the extent to which accelerant is coated within the venting holes 12-16 of the finished product. The piston 36 is again engaged (FIG. 7) for compacting, and the shaped fuel article 4 is then ejected (FIG. 8) through the end opposite of the piston 36, the exit path created by pivoting the base plate 34 outwardly from the sleeve 32.

The shaped fuel articles 4 are then loaded into drying trays, which are put into a kiln for drying. The kiln is preferably tunnel-shaped and extends approximately 40-50 meters. The entrance temperature of this kiln is approximately 150°C, and the air is dry. This atmosphere is maintained for 6.5 to 7 hours, at which time they are removed. The exit temperature is a very moist 50-60°C. The fuel article is then smoothed, and a fuse 18, formed as a substantially circular disc of fibrous material, is attached on a surface which had received the accelerant mixture. The fuse 18 is centrally-located on the fuel, above the cruciform-shaped aperture 12. The fuel article 10 is then packaged in

a protective layer 20, preferably plastic shrinkwrap. After each fuel article 10 is individually encased, as shown in FIGS. 10-13, a set of six fuel articles 25 (each individually wrapped) is arranged in a circular orientation, and the unit is wrapped as a set in a second protective layer 20, as in FIGS. 14-15.

The finished fuel article 10 is cylindrically-shaped. Referring to FIG. 11, the cross section of the short axis of the article 10 is preferably defined by a circle from which two portions have been excised. The excised portions are defined by two planes 22 coincidental with two chords of the circle. The planes 22, when extrapolated, form an included angle of approximately 30°. This angle permits orientation of six such articles to define a circle about a center portion which is free of the cooking medium. This center portion of the circle is the optimal area for cooking. If food is cooked over this center portion, drippings from the barbecued item will not drip onto the coals and produce smoke or other undesirable effects which tend to adversely affect the flavor of the barbecued item. Cooking directly over the fuel article 10 subjects the barbecued item to greater heat overall, which leads to greater cooking control when using fuel articles of the present invention.

The accelerant mixture includes barium and sodium nitrates, which are oxidizers that serve to ignite the body portion of the fuel article 10. When the accelerant mixture is applied and the resulting mass compacted, the accelerant mixture flows into the venting holes 12-16. The degree to which the inside surface is coated is directly related to the viscosity of the accelerant mixture. This process produces zones of designated accelerated heating, which include the accelerant-covered top surface, the profile of each of the venting holes 12-16 in the accelerant-covered surface, and the circumscribing

peripheral walls of the fuel article 10. Thus, the function of the centrally-located cruciform-shaped aperture 12 is to provide a surface that is more conducive to ignition than the rest of the fuel article 10. Ignition at the centrally-located cruciform-shaped aperture 12 is preferable due to the increased surface area provided by the several corners defined inside the vent. These areas are more conducive to ignition than any other area of the fuel article 12, having a greater surface area relative to its size. After ignition at the center, burning of the accelerant coating continues radially outward, due to the substantially even coating of the accelerant provided by the method of the present invention. When the burning contacts the peripheral venting holes 13-16, a similar phenomenon occurs, providing uniform burning by virtue of the substantially even spacing of the venting hold 13-16. Because all of the venting holes 12-16 extend through the entire fuel article 10, enhanced airflow is provided, encouraging even top-to-bottom burning of the fuel article 10. The inclusion of anthracite coal in the body of the fuel article 10 provides cleaner burning than charcoal alone, which is also useful in avoiding off-flavors and odors in the barbecued item.

The following tables reflect the general ranges for both the accelerant components and body components. The tables also reflect the preferred formulation for a specific briquette.

FORMULATION 1:

accelerant components	general ranges	specific briquette
weight percent	10-35%	20%
wood charcoal	45-80%	53%
anthracite coal	1-20%	10%
barium nitrate	10-32%	31%
sodium nitrate	0.05-5%	4%
starch (binder)	1-2.5%	2%
TOTAL COMPONENT %	**N/A**	**100%**

body components	general ranges	specific briquette
weight percent	65-90%	80%
wood charcoal	10-65%	33.50%
anthracite coal	35-90%	62.50%
starch (binder)	2.5-5%	4%
TOTAL COMPONENT %	**N/A**	**100%**

FORMULATION 2:

accelerant components	general ranges	specific briquette
weight percent	6-35%	10.7%
wood charcoal	48-92.4%	78%
calcium nitrate	3.05-22%	10.4%
potassium nitrate	2.5-22%	8%
sodium nitrate	0.05-4%	1.6%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

body components	general ranges	specific briquette
weight percent	65-94%	89.3%
wood charcoal	10-65%	23%
anthracite coal	33-86%	75%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

Moreover, having thus described the invention, it should be apparent that numerous structural modifications and adaptations may be resorted to without departing from the scope and fair meaning of the instant invention as set forth hereinabove and as described hereinbelow by the claims.

ABSTRACT OF THE DISCLOSURE

A fuel article, suitable for barbecuing, allowing greater burning efficiency and the method of making such a fuel article. The fuel article includes anthracite coal for cleaner burning and utilizes an accelerant covering containing nitrates to be amenable to easy ignition.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE OF THE INVENTION

Combustible Fuel Composition and Method

This application is a continuation-in-part of application number 09/881,310, filed June 13, 2001, status: pending.

FIELD OF THE INVENTION

The following invention is generally related to instrumentalities and methodologies in combustible fuels. More specifically, the instant invention is directed to a method and apparatus for a combustible fuel that is easily lit by an external ignition source and is resistant to deterioration of effectiveness, thereby having a long shelf life.

BACKGROUND OF THE INVENTION

Many efforts have been made to produce fuels for barbecuing that are clean-burning, easy to handle, and easily ignitable. Charcoal, usually made from a wood base, is the most common component of fuels for barbecuing. Charcoals having vegetable and coal bases have also been used. Such fuels are difficult to ignite for cooking and often require the use of an ancillary flammable material, such as lighter fluid or newspaper, to create a flame of sufficient duration for the charcoal to ignite.

Previous innovations have involved the impregnation of charcoal with a more flammable compound, such as lighter fluid (or other volatile fluids, such as higher alkanes), waxes, or other oxidants that burn faster and more readily than charcoal. These penetrate only the outer surface of the charcoal. Those including volatile components or that are very easily oxidized are susceptible to dissipation over time, greatly reducing the effectiveness of those fuels. Other processes create a mixture of charcoal and an ignitable material, ultimately forming a homogeneous material that, overall, should be easier to burn. The point, however, of utilizing easily ignitable material is to achieve the initial burning of the charcoal. Once the charcoal reaches a certain level of combustion, it burns without further aid. Mixing the ignitable component throughout the fuel adds little overall benefit, because the benefits of ancillary ignitable components are superfluous once the combustion of the charcoal is underway. The use of volatile or easily combustible components throughout such fuels produces fumes during combustion, which may impart undesirable flavors to food cooked using such an article. Such fumes would be given off during the entire burning time, which is a considerable drawback to these types of fuels.

Another consideration for combustible fuel is efficient burning. Some fuels release a very large amount of heat during the initial stages, which tapers off to a much lower release rate during the time appropriate for cooking. It would be more efficient, and perhaps safer, to have a fuel whose heat release rate during ignition was less than the release rate during the optimal cooking time. In this way, the heat generated by a fuel would not be wasted in the startup process, but could be utilized in the form of longer cooking times.

By way of example, one commercially-available charcoal-based fuel exhibits the heat-release profile shown in FIG. 1. The graph depicts the rate of heat release per area of material. The graph peaks at 300-350 kilowatts per square meter during ignition of the material, dropping to a steady-state heat-release rate of approximately 40-50 kilowatts per square meter. This represents an initial ignition stage in which a large amount of heat is released very quickly before the release rate ramps down to a state in which cooking is appropriate.

The following prior art reflects the state of the art of which applicant is aware and is included herewith to discharge applicant's acknowledged duty to disclose relevant prior art. It is stipulated, however, that none of these references teach singly nor render obvious when considered in any conceivable combination the nexus of the instant invention as disclosed in greater detail hereinafter and as particularly claimed.

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Kim teaches a three-layer combustible fuel article, comprising three distinct layers: a fire-igniting layer, a fire-catching layer, and a body layer. The body layer contains carbonized wood and a starch binder, and the other layers include less carbonized wood and more easily-ignitable components. Also included are optional air holes and optional grooves for visual appeal. *Inter alia*, Kim specifically recites that "No coal is used in the combustible articles." (col. 2, line 12)

The remaining citations diverge even further from the nexus of the instant invention.

SUMMARY OF THE INVENTION

The present invention addresses all of the most pervasive problems regarding charcoal-type fuels. In its essence, the present invention is embodied in a freestanding fuel article whose top surface is coated with an accelerant comprising [barium nitrate and] sodium nitrate and either barium nitrate or a combination of sodium and potassium nitrates, and in a method for making such a fuel article. The body comprises a homogeneous mixture of wood charcoal, anthracite coal, and a starch binder, and contains regularly-spaced vents that extend though its entire thickness. One of these vents is centrally located and of a cruciform shape. [Above this vent is] If desired, a fuse or lighting tab made out of a combustible material may be located above this vent. Each fuel article is individually wrapped until use, preventing any dissipation of ignition materials during periods of nonuse. After initial ignition, the fuel is ready for cooking in less than five minutes.

The fuel is made by creating mixtures of the body portion and of the accelerant, and then introducing them successively into a forming device, compacting between each step. The vents are formed during the compaction step. The fuel is ejected from the forming device and then dried in a heated environment to remove any excess water from the mixture. The surface of the fuel is smoothed, the fuse or lighting tab, if desired, is applied, and the fuel is then packaged, first individually, and then in groups better suited to larger cooking apparatus.

[When the fuse or tab is lit, ignition is forced at the centrally-located vent.] Ignition of the fuel occurs by lighting at the centrally-located vent. The fuel may be directly ignited on its accelerant-covered surface, or it may be lighted on a fuse or

lighting tab present at the central location for convenience. This vent has increased surface area due to the corner edges inherent in its shape, allowing quicker and more efficient ignition. The ignited area in the center of the fuel spreads out across the entire coating of accelerant, which includes some of the surface area extending down into the top of each vent. By the time the accelerant is entirely consumed, the body has ignited and continues to burn. The vents through the body allow air to circulate and produce a chimney effect, and also provide preferential burning sites due to their greater surface area. This air circulation allows the body to burn evenly and more completely during its steady-state combustion period than if air circulation were not allowed. The concentration of accelerant at the top of the fuel directs the steady burning of the fuel from the top down.

The addition of anthracite coal to the body composition produces a cleaner-burning fuel than a pure charcoal fuel. The homogeneous dispersion of wood charcoal throughout the coal in the present invention provides a catalytic effect, allowing the coal to burn more easily than it would without the addition of charcoal. Additionally, the fuel according to the present invention has a much lower heat release rate than conventional charcoal fuel articles during the ignition stage, and the heat-release rate is lower during the ignition stage than during the steady-state cooking stage, both of which translate to longer burning times. The [heat] steady-state heat-release rate and the steady-state burning temperature of the fuel according to the present invention are also higher than that of commercially available charcoal fuel articles.

Compare FIG. 1, the profile of a commercially-available fuel material, described above, with FIG. 2, the profile of the fuel according to the present invention. At the

ignition stage, the heat-release rate peaks at approximately 45-55 kilowatts per square meter before briefly dropping, and then increasing to its steady-state rate of approximately 60-65 kilowatts per square meter. This represents a lower release of energy during ignition, which translates into a longer burning time.

OBJECTS OF THE INVENTION

Accordingly, it is a primary object of the present invention to provide a new and novel combustible fuel that is easily lit by an external ignition source.

It is a further object of the present invention to provide a device and method which lends itself easily to methods of mass production.

It is a further object of the present invention to provide a device and method as characterized above which is less susceptible to deterioration of effectiveness before use.

It is a further object of the present invention to provide a device and method as characterized above which provides a longer steady-state response, which is representative of a protracted time for use.

It is a further object of the present invention to provide a device and method as characterized above which releases heat at a lower level at ignition than at steady-state, burning more efficiently to allow optimal cooking.

It is a further object of the present invention to provide a device and method as characterized above that is easy to handle and store.

It is a further object of the present invention to provide a device and method as characterized above that is easily adaptable to heating tasks of varying scope.

It is a further object of the present invention to provide a device and method as characterized above which provides a cleaner burning product than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that achieves a higher steady-state burning temperature than conventional charcoal.

It is a further object of the present invention to provide a device and method as characterized above that is ready for cooking in a very short time, typically about 3-10 minutes.

Viewed from a first vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a second vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, [said] the mixture containing anthracite coal as a component thereof, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a third vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding, and affixing fusing means to [said] the accelerant-covered surface.

Viewed from a fourth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, [said] the forming device having means for creating venting means, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a fifth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, [said] the forming device having means for creating venting means, compacting [said] the mixture to produce a monolith of carbonaceous material having a

fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, [said] the accelerant allowed to coat an interior surface of [said] the venting means, pressing [said] the monolith of carbonaceous material including [said] the accelerant, and drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding.

Viewed from a sixth vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, placing [said] the mixture into a forming device, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, pressing [said] the monolith of carbonaceous material including [said] the accelerant, drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding, and encasing [said] the fuel in a protective covering.

Viewed from a seventh vantage point, it is an object of the present invention to provide a method of making a fuel for barbecuing, the steps including: forming a mixture including liquid and carbonaceous material, [said] the mixture containing anthracite coal as a component thereof, placing [said] the mixture into a forming device, [said] the forming device having means for creating venting means, compacting [said] the mixture to produce a monolith of carbonaceous material having a fixed form, introducing an accelerant into [said] the forming device containing [said] the monolith of carbonaceous material, [said] the accelerant allowed to coat an interior surface of [said] the venting means, pressing [said] the monolith of carbonaceous material

including [said] the accelerant, removing [said] the monolith of carbonaceous material including [said] the accelerant from [said] the forming device, drying [said] the monolith of carbonaceous material such that [said] the fixed form is freestanding, affixing fusing means to [said] the accelerant-covered surface, and encasing [said] the fuel in a protective covering.

Viewed from an eighth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, and an accelerant, [said] the accelerant disposed on a portion of [said] the surface of [said] the monolith of carbonaceous material.

Viewed from a ninth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a top surface, [said] the carbonaceous material comprising charcoal, starch, and anthracite coal, and an accelerant, [said] the accelerant disposed on [said] the top surface of [said] the monolith of carbonaceous material.

Viewed from a tenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material having a surface, [said] the carbonaceous material comprising charcoal, a binder, and anthracite coal, and an accelerant, [said] the accelerant disposed on [said] the surface of [said] the monolith of carbonaceous material and [said] the accelerant further including anthracite coal.

Viewed from an eleventh vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a carbonaceous material having a surface, an accelerant, [said] the accelerant on a portion of [said] the surface of

[said] the carbonaceous material, venting means in [said] the carbonaceous material, and fusing means, [said] the fusing means on [said] the portion of [said] the carbonaceous material containing [said] the accelerant.

Viewed from a twelfth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising: a carbonaceous material, [said] the carbonaceous material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of [said] the cylinder defined by a plurality of planes cutting through chords of [said] the circle.

Viewed from a thirteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising a carbonaceous material, [said] the carbonaceous material having zones of designated accelerated heating localized at venting means passing through [said] the carbonaceous material.

Viewed from a fourteenth vantage point, it is an object of the present invention to provide [A] a fuel for barbecuing, comprising in combination: a carbonaceous material having a surface, an accelerant, [said] the accelerant disposed on a portion of [said] the surface of [said] the carbonaceous material, and fusing means, [said] the fusing means disposed on [said] the surface of [said] the carbonaceous material coincidental with [said] the accelerant.

Viewed from a fifteenth [bantage] vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, [said] the monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and an [accelarant] accelerant

coating a [protion] portion of [said] the monolith of carbonaceous material, [said] the accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Viewed from a sixteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein [said] the core comprises 65-90% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of [said] the core, wherein [said] the accelerant comprises 10-35% of the total mass of the fuel.

Viewed from a seventeenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, [said] the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of [said] the core, [said] the accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a eighteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, [said] the core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of [said] the core, [said] the accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Viewed from a nineteenth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality

of facets, [said] the core comprising 75-80% of the total mass of the fuel, and an accelerant applied predominantly to at least one facet of [said] the core, [said] the accelerant comprising 20-25% of the total mass of the fuel.

Viewed from a twentieth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a monolith of carbonaceous material, the monolith of carbonaceous material comprising 10-65% wood charcoal, 33-86% anthracite coal, and a binder; and an [accelarant] accelerant coating a portion of the monolith of carbonaceous material, the accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Viewed from a twenty-first vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein the core comprises 65-94% of the total mass of the fuel, and an accelerant predominantly applied to at least one facet of the core, wherein the accelerant comprises 6-35% of the total mass of the fuel.

Viewed from a twenty-second vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core comprising a plurality of facets, the core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of the core, the accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-third vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and an accelerant applied predominantly to at least one facet of said core, the accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Viewed from a twenty-fourth vantage point, it is an object of the present invention to provide a fuel for barbecuing, comprising, in combination: a core having a plurality of facets, the core comprising 85-95% of the total mass of the fuel, and an accelerant applied predominantly to at lease one facet of the core, the accelerant comprising 5-25% of the total mass of the fuel.

These and other objects will be made manifest when considering the following detailed specification when taken in conjunction with the appended drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a heat release rate profile for a commercially-available fuel.

Figure 2 is a heat release rate profile for a fuel according to the present invention.

Figures 3A and 3B [is a] are flowcharts of two embodiments of the method according to the present invention.

Figure 4 is a depiction of the introduction of the body mixture into the molding device.

Figure 5 is a depiction of the compacting of the body mixture.

Figure 6 is a depiction of the introduction of the accelerant mixture into the molding device.

Figure 7 is a depiction of the compacting of the accelerant-covered body mixture.

Figure 8 is a depiction of the ejection of the compacted, shaped fuel article.

Figure 9 is a depiction of the method of using the fuel article of the present invention. An optional fuse or lighting tab is present.

Figure 10 is a perspective view of the bottom of the fuel article according to the present invention.

Figure 11 is a top view of the fuel article according to the present invention.

Figure 12 is a bottom view of the fuel article according to the present invention.

Figure 13 is a cutaway view of the section defined in Figure 14.

Figure 14 is a perspective view of a set of six wrapped fuel articles according to the present invention.

Figure 15 is a top view of a set of six wrapped fuel articles according to the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Considering the drawings, wherein like reference numerals denote like parts throughout the various drawing figures, reference numeral 10 as shown in FIG. 9 is directed to the fuel article according to the present invention.

Referring to FIGS. 3A,3B, the flow charts associated with the method of the present invention can be explored. Initially, each component of the fuel is in a separate container. A computer is used to measure and dispense the proper amount of each component into an appropriate mixing tank. The wood charcoal, anthracite coal, [sodium nitrate,] and [barium] nitrates are dry, and the binder mixture is starch preferably combined with water. In one tank, charcoal, coal, and the binder mixture are combined to produce a body mixture, preferably to the consistency of a viscous paste. In a second tank, either charcoal, coal, sodium nitrate, barium nitrate, and the binder mixture (FIG. 3A) or charcoal, sodium nitrate, potassium nitrate, calcium nitrate, and the binder mixture (FIG. 3B) are combined to produce an accelerant mixture. The amount of liquid present in the accelerant mixture may be varied to produce optimal results, as will be explained later in the process.

Referring now to FIGS. 4-8, the construction and operation of the molding device 30 used to form the fuel article 10 can be explored. The molding device 30 has a sleeve 32, to which is attached a base plate 34, preferably a solid plate. The base plate 34 is attached by a pivot to one end of the sleeve 32 such that the base plate 34 pivots outwardly from the sleeve 32, but in the same plane as the opening in the sleeve 32. At the other end of the sleeve is oriented a piston 36 containing shaped rods 38. The rods 38 preferably form and define vents in the fuel article 10, depicted in FIGS. 9-12 as a

centrally-located cruciform-shaped aperture 12, with peripheral circular bores 14 and peripheral elongated slots 16, arranged in an alternating pattern extending radially outward from the centrally-located cruciform-shaped aperture 12.

The molding device 30 is loaded (FIG. 4) with the body mixture to form the monolith 2 that comprises the long-burning body portion of the fuel. The mixture is compacted with the piston 36 (FIG. 5). The rods 38 attached to the piston 36 extend through the mixture to form the venting holes 12-16 in the fuel article 10, the shapes of the venting holes 12-16 corresponding to the various shapes of the rods 38. After the piston 36 is retracted, the accelerant mixture is introduced (FIG. 6) into the molding device 30. The viscosity of the accelerant mixture will determine the extent to which the accelerant penetrates the monolith 2 and the extent to which accelerant is coated within the venting holes 12-16 of the finished product. The piston 36 is again engaged (FIG. 7) for compacting, and the shaped fuel article 4 is then ejected (FIG. 8) through the end opposite of the piston 36, the exit path created by pivoting the base plate 34 outwardly from the sleeve 32.

The shaped fuel articles 4 are then loaded into drying trays, which are put into a kiln for drying. The kiln is preferably tunnel-shaped and extends approximately 40-50 meters. The entrance temperature of this kiln is approximately 150°C, and the air is dry. This atmosphere is maintained for 6.5 to 7 hours, at which time they are removed. The exit temperature is a very moist 50-60°C. The fuel article is then smoothed, and a fuse 18, formed as a substantially circular disc of fibrous material, is attached on a surface which had received the accelerant mixture. The fuse 18 is centrally-located on the fuel, above the cruciform-shaped aperture 12. The fuel article 10 is then packaged in

a protective layer 20, preferably plastic shrinkwrap. After each fuel article 10 is individually encased, as shown in FIGS. 10-13, a set of six fuel articles 25 (each individually wrapped) is arranged in a circular orientation, and the unit is wrapped as a set in a second protective layer 20, as in FIGS. 14-15.

The finished fuel article 10 is cylindrically-shaped. Referring to FIG. 11, the cross section of the short axis of the article 10 is preferably defined by a circle from which two portions have been excised. The excised portions are defined by two planes 22 coincidental with two chords of the circle. The planes 22, when extrapolated, form an included angle of approximately 30°. This angle permits orientation of six such articles to define a circle about a center portion which is free of the cooking medium. This center portion of the circle is the optimal area for cooking. If food is cooked over this center portion, drippings from the barbecued item will not drip onto the coals and produce smoke or other undesirable effects which tend to adversely affect the flavor of the barbecued item. Cooking directly over the fuel article 10 subjects the barbecued item to greater heat overall, which leads to greater cooking control when using fuel articles of the present invention.

The accelerant mixture includes barium and sodium nitrates, which are oxidizers that serve to ignite the body portion of the fuel article 10. When the accelerant mixture is applied and the resulting mass compacted, the accelerant mixture flows into the venting holes 12-16. The degree to which the inside surface is coated is directly related to the viscosity of the accelerant mixture. This process produces zones of designated accelerated heating, which include the accelerant-covered top surface, the profile of each of the venting holes 12-16 in the accelerant-covered surface, and the circumscribing

peripheral walls of the fuel article 10. Thus, the function of the centrally-located cruciform-shaped aperture 12 is to provide a surface that is more conducive to ignition than the rest of the fuel article 10. Ignition at the centrally-located cruciform-shaped aperture 12 is preferable due to the increased surface area provided by the several corners defined inside the vent. These areas are more conducive to ignition than any other area of the fuel article 12, having a greater surface area relative to its size. After ignition at the center, burning of the accelerant coating continues radially outward, due to the substantially even coating of the accelerant provided by the method of the present invention. When the burning contacts the peripheral venting holes 13-16, a similar phenomenon occurs, providing uniform burning by virtue of the substantially even spacing of the venting hold 13-16. Because all of the venting holes 12-16 extend through the entire fuel article 10, enhanced airflow is provided, encouraging even top-to-bottom burning of the fuel article 10. The inclusion of anthracite coal in the body of the fuel article 10 provides cleaner burning than charcoal alone, which is also useful in avoiding off-flavors and odors in the barbecued item.

The following table[s] reflect[s] the general ranges for both the accelerant components and body components. The table[s] also reflect[s] the preferred formulation for a specific briquette.

FORMULATION 1:

accelerant components	general ranges	specific briquette
weight percent	10-35%	20%
wood charcoal	45-80%	53%
anthracite coal	1-20%	10%
barium nitrate	10-32%	31%
sodium nitrate	0.05-5%	4%
star[t]ch (binder)	1-2.5%	2%
TOTAL COMPONENT %	**N/A**	**100%**

body components	general ranges	specific briquette
weight percent	65-90%	80%
wood charcoal	10-65%	33.50%
anthracite coal	35-90%	62.50%
star[t]ch (binder)	2.5-5%	4%
TOTAL COMPONENT %	**N/A**	**100%**

FORMULATION 2:

accelerant components	general ranges	specific briquette
weight percent	6-35%	10.7%
wood charcoal	48-92.4%	78%
calcium nitrate	3.05-22%	10.4%
potassium nitrate	2.5-22%	8%
sodium nitrate	0.05-4%	1.6%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

body components	general ranges	specific briquette
weight percent	65-94%	89.3%
wood charcoal	10-65%	23%
anthracite coal	33-86%	75%
starch (binder)	2-4%	2%
TOTAL COMPONENT %	**N/A**	**100%**

Moreover, having thus described the invention, it should be apparent that numerous structural modifications and adaptations may be resorted to without departing from the scope and fair meaning of the instant invention as set forth hereinabove and as described hereinbelow by the claims.

ABSTRACT OF THE DISCLOSURE

A fuel article, suitable for barbecuing, allowing greater burning efficiency and the method of making such a fuel article. The fuel article includes anthracite coal for cleaner burning and utilizes an accelerant covering containing nitrates to be amenable to easy ignition.

Bracketed and Underlined Claims under 37 C.F.R. §1.121

Claim 19 (amended) - The fuel of claim 18 wherein said accelerant comprises [[range]] 10-32% barium nitrate and 0.05-5% sodium nitrate.

Claim 32 (amended) - A fuel for barbecuing, comprising, in combinat[u]ion:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Copy of All Pending Claims

Claim 1 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 2 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 3 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant,

drying said monolith of carbonaceous material such that said fixed form is freestanding, and

affixing fusing means to said accelerant-covered surface.

Claim 4 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 5 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means,

pressing said monolith of carbonaceous material including said accelerant, and

drying said monolith of carbonaceous material such that said fixed form is freestanding.

Claim 6 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material,

placing said mixture into a forming device,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material,

pressing said monolith of carbonaceous material including said accelerant,

drying said monolith of carbonaceous material such that said fixed form is freestanding, and

encasing said fuel in a protective covering.

Claim 7 - A method of making a fuel for barbecuing, the steps including:

forming a mixture including liquid and carbonaceous material, said mixture containing anthracite coal as a component thereof,

placing said mixture into a forming device, said forming device having means for creating venting means,

compacting said mixture to produce a monolith of carbonaceous material having a fixed form,

introducing an accelerant into said forming device containing said monolith of carbonaceous material, said accelerant allowed to coat an interior surface of said venting means,

pressing said monolith of carbonaceous material including said accelerant,

removing said monolith of carbonaceous material including said accelerant from said forming device,

drying said monolith of carbonaceous material such that said fixed form is freestanding,

affixing fusing means to said accelerant-covered surface, and

encasing said fuel in a protective covering.

Claim 8 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a surface, and

an accelerant, said accelerant disposed on a portion of said surface of said monolith of carbonaceous material.

Claim 9 - The fuel of claim 8 further comprising fusing means disposed on said accelerant-covered surface of said monolith of carbonaceous material.

Claim 10 - The fuel of claim 8 wherein said monolith of carbonaceous material includes anthracite coal.

Claim 11 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a top surface, said carbonaceous material comprising charcoal, starch, and anthracite coal, and

an accelerant, said accelerant disposed on said top surface of said monolith of carbonaceous material.

Claim 12 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material having a surface, said carbonaceous material comprising charcoal, a binder, and anthracite coal, and

an accelerant, said accelerant disposed on said surface of said monolith of carbonaceous material and said accelerant further including anthracite coal.

Claim 13 - A fuel for barbecuing, comprising, in combination:

a carbonaceous material having a surface,

an accelerant, said accelerant on a portion of said surface of said carbonaceous material,

venting means in said carbonaceous material, and

fusing means, said fusing means on said portion of said carbonaceous material containing said accelerant.

Claim 14 - The fuel of claim 13 wherein said fusing means overlies one of said venting means.

Claim 15 - The fuel of claim 14 wherein said venting means located under said lighting tab is a cruciform shaped-aperture.

Claim 16 - The fuel of claim 15 wherein said cruciform-shaped aperture located under said fusing means is centrally-located in said accelerant-covered portion of said carbonaceous material.

Claim 17 - The fuel of claim 16 wherein said carbonaceous material comprises anthracite coal and wood charcoal.

Claim 18 - The fuel of claim 17 wherein said carbonaceous material comprises 35-90% of anthracite coal and 10-65% of wood charcoal.

Claim 19 - The fuel of claim 18 wherein said accelerant comprises 10-32% barium nitrate and 0.05-5% sodium nitrate.

Claim 20 - The fuel of claim 19 wherein said fuel is formed into a substantially circular shape.

Claim 21 - The fuel of claim 20 wherein said substantially circular shape further includes a plurality of chords defining portions to be removed.

Claim 22 - The fuel of claim 21 wherein said plurality of chords is located on one half of said substantially circular shape.

Claim 23 - The fuel of claim 22 wherein said plurality of chords further includes endpoints of a diameter of said substantially circular shape.

Claim 24 - The fuel of claim 23 wherein said venting means comprise a plurality of circular bores.

Claim 25 - The fuel of claim 24 wherein said venting means further comprise a plurality of elongated slots.

Claim 26 - The fuel of claim 25 wherein said plurality of circular bores and said plurality of elongated slots are arrayed in an alternating pattern radiating outward from said centrally-located cruciform-shaped aperture.

Claim 27 - A fuel for barbecuing, comprising:

a carbonaceous material, said carbonaceous material having a shape which is a cylinder including a plan view which is a circle and a circumscribing sidewall, and having flattened surfaces on the sidewall of said cylinder defined by a plurality of planes cutting through chords of said circle.

Claim 28 - The fuel of claim 27 wherein said plurality of planes is two, having an included angle of 30°, allowing nesting in a substantially toroidal shape.

Claim 29 - A fuel for barbecuing, comprising:

a carbonaceous material, said carbonaceous material having zones of designated accelerated heating localized at venting means passing through said carbonaceous material.

Claim 30 - The fuel of claim 29 wherein said zones of designated accelerated heating include a circumscribing peripheral wall of said fuel and bores passing through said fuel defining said venting means and having an accelerant thereon.

Claim 31 - A fuel for barbecuing, comprising in combination:

a carbonaceous material having a surface,

an accelerant, said accelerant disposed on a portion of said surface of said carbonaceous material, and

fusing means, said fusing means disposed on said surface of said carbonaceous material coincidental with said accelerant.

Claim 32 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 35-90% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 45-80% wood charcoal, 10-32% barium nitrate, 0.05-5% sodium nitrate, 1-20% anthracite coal, and a binder.

Claim 33 - A fuel for barbecuing, comprising, in combination:

a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core comprises 65-90% of the total mass of the fuel, and

an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 10-35% of the total mass of the fuel.

Claim 34 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 10-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Claim 35 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 30-40% wood charcoal, 55-65% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 60-70% wood charcoal, 25-32% barium nitrate, 1-5% sodium nitrate, 5-10% anthracite coal, and a binder.

Claim 36 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 75-80% of the total mass of the fuel, and

an accelerant applied predominantly to at lease one facet of said core, said accelerant comprising 20-25% of the total mass of the fuel.

Claim 37 - The fuel of claim 17 wherein said carbonaceous material comprises 33-86% of anthracite coal and 10-65% of wood charcoal.

Claim 38 - The fuel of claim 18 wherein said accelerant comprises 3.05-22% calcium nitrate, 2.5-22% potassium nitrate and 0.05 - 4% sodium nitrate.

Claim 39 - A fuel for barbecuing, comprising, in combination:

a monolith of carbonaceous material, said monolith of carbonaceous material comprising 10-65% wood charcoal, 32-86% anthracite coal, and a binder; and

an accelerant coating a portion of said monolith of carbonaceous material, said accelerant comprising 48-92.4% wood charcoal, 3.05-22% calcium nitrate, 2.5-22% potassium nitrate, 0.05-4% sodium nitrate, and a binder.

Claim 40 - A fuel for barbecuing, comprising, in combination:

a core comprising a plurality of facets, comprising wood charcoal and anthracite coal, wherein said core comprises 65-94% of the total mass of the fuel, and

an accelerant predominantly applied to at least one facet of said core, wherein said accelerant comprises 6-35% of the total mass of the fuel.

Claim 41 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-50% wood charcoal, 50-80% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 55-75% wood charcoal, 5-15% calcium nitrate, 5-15% potassium nitrate, 1-5% sodium nitrate, and a binder.

Claim 42 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 20-30% wood charcoal, 65-85% anthracite coal, and a binder; and

an accelerant applied predominantly to at least one facet of said core, said accelerant comprising 65-85% wood charcoal, 10-15% calcium nitrate, 5-10% potassium nitrate, 1-5% sodium nitrate, and a binder.

Claim 43 - A fuel for barbecuing, comprising, in combination:

a core having a plurality of facets, said core comprising 85-95% of the total mass of the fuel, and

an accelerant applied predominantly to at lease one facet of said core, said accelerant comprising 5-25% of the total mass of the fuel.

CERTIFICATE OF MAILING UNDER 37 C.F.R. 1.10

Applicant: Cui Bao Tai, Jerry Sharon

For: Combustible Fuel Composition and Method

Paper:

1. A Patent Application (Utility) (comprised of pages 1 through 30);
2. A Utility Patent Application Transmittal;
3. A Fee Transmittal (original and one copy);
4. Request and Certification under 35 U.S.C. 122(b)(2)(B)(i);
5. Preliminary Amendment;
6. Substitute Specification under 37 CFR § 1.121(b)(3)
7. Bracketed and Underlined Sections of Patent Specification (pages 1-25)
8. Bracketed and Underlined Claims under 37 C.F.R. §1.121 (1 page);
9. Clean Copy of Pending Claims under 37 C.F.R. §1.121 (pages 1-10 dated February 1, 2002)
10. A Declaration for Patent Application;
11. A Recordation Form Cover Sheet;
12. An Assignment of Patent Application;
13. A Power of Attorney (copy from previous application);
14. Seven (7) sheets of drawing figures (comprised of figures 1 through 15);
15. A Form PTO-1449 (including prior art copies); and
16. A check in the amount of $1,499.00, $370.00 of which is to cover the government filing fee for utility patent, $207.00 of which is to cover the government fee for 18 claims in excess of twenty, $882.00 of which is to cover the government fee for 16 independent claims in excess of three and $40.00 of which is to cover the government fee for recordation of assignment.

I hereby certify that the above identified correspondence, which is attached, is being deposited with the **United States Postal Service, Express Mail, with sufficient postage, Post Office to Addressee, mailing label #EV000255796US,** in an envelope addressed to:

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on February 1, 2002.

Heidi Hernandez

(Signature)

February 1, 2002

(Date of Signature)